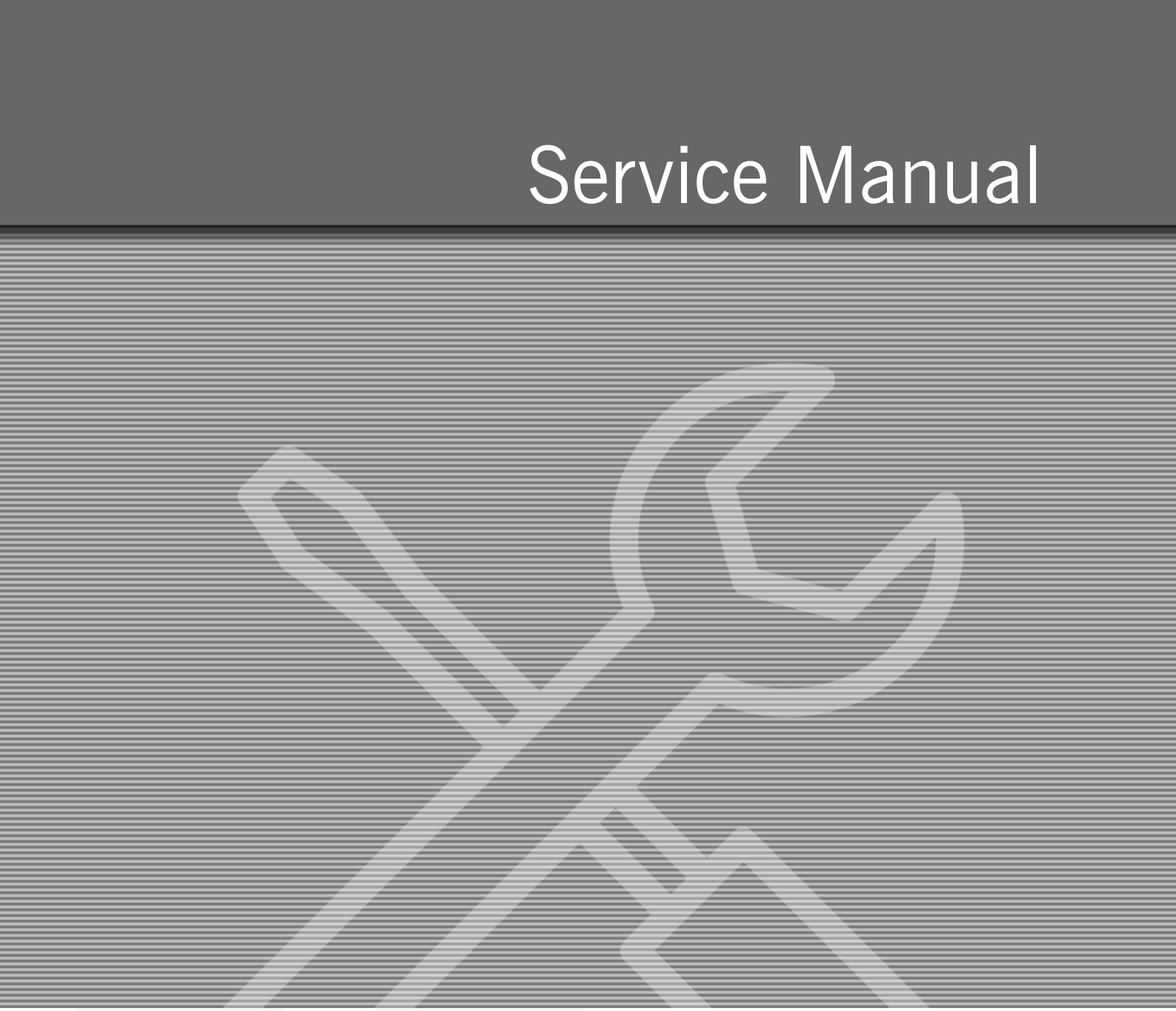
Service Manual

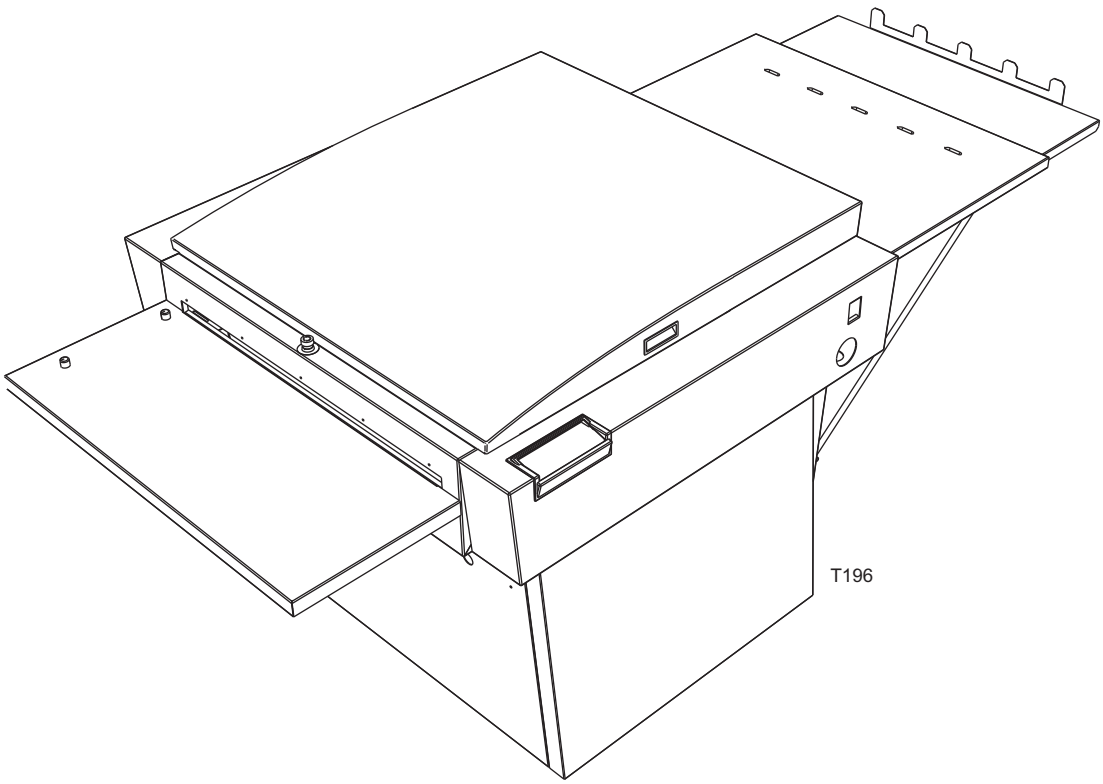


Raptor 68/85 Silver

GLUNZ & JENSEN

Service Manual

Raptor 68/85 Silver



Edition FC, January 2008
This book has part No. 51261

Part 0: General information

This manual

Products covered

This manual is valid for the following processors:

Raptor 68 Silver from serial no **91802-0262**.
Raptor 85 Silver from serial no **91699-0116.**

The serial number is specified on the processor name plate located on the rear end of the tank on the left side.

This manual is for Service Technicians only.

The directions given must not be followed by unauthorized personnel.

Always read the *Safety Instruction Manual part No 21741* before installing the equipment.

Other manuals

Please see description of "Manuals delivered with the plate processor" later in this chapter.

Publisher

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Reservations

- This manual was written and illustrated using the best possible information available at the time of publication.
- Any differences between this manual and the equipment reflect improvements introduced after the publication of the manual.
- Changes, technical inaccuracies and typographic errors will be corrected in subsequent editions.
- As a part of our policy of continuous improvement, we reserve the right to alter design and specifications without further notice.

Notes, Cautions, and Warnings !

Throughout the manual notes, cautions, and warnings are written in bold like the example below:

Always replace a fuse with one of the same size and rating as the old one.

Symbol	Meaning	Explanation
	Note	The operator should observe and/or act according to the information in order to obtain the best possible function of the equipment.
	Caution	The operator must observe and/or act according to the information in order to avoid any mechanical or electrical damage to the equipment.
	Warning	The operator must observe and/or act according to the information in order to avoid any personnel injury.

The processor

Accreditation

The settings illustrated on page 2/2 on the quickguide 51240 delivered with the processor are mandatory and are to be considered a condition for the Agfa Accreditation of the silver plate processor for the Agfa Lithostar plates.
It is recommended that the plate setter device is calibrated once the settings have been confirmed in the processor.

Approvals

- Approvals will appear from the labels attached to the name plate or the frame part of the processor.

Unintended use of the equipment

Glunz & Jensen A/S do not take any responsibility for any damage or accidents caused by unintended use of the equipment:

- As the equipment is certified by accredited test laboratory (UL International Demko A/S) it is absolutely prohibited to make any modifications, electrical nor mechanical, of the equipment. If however this prohibition is disregarded, Glunz & Jensen's warranty will no longer apply and the certification labels for UL, C-UL, and CE certification of the equipment shall be removed as the certification will no longer apply to the equipment.

Intended use of the equipment

- Development of photographic materials as specified in “Technical specifications” in Part 1 in this manual.

Installation

- Never install the processor in explosive environments.
- It is the responsibility of the owner and operator/s of this processor that the installation is made in accordance with local regulations, and by engineers authorized to carry out plumbing and electrical installations.
- Installation, service and repair must be performed only by service technicians who are trained in servicing the equipment. The installation procedure is described in the separate “Installation manual”.
- The manufacturer cannot be held responsible for any damage caused by incorrect installation of this processor.

Technical data

- Observe technical data from the processor name plate and from Part 1 in this manual.

Chemicals

- It is the responsibility of the owner of this equipment that data is available concerning possible health risk from the chemicals used with the equipment.

"End of lifetime" disposal

The equipment is designed for easy disassembling. All disposal of parts from the machine must be made according to local regulations with special regards to following parts:

- For recycling purposes significant components are marked with material specification according to the ISO 11469 standard.
- PVC, tank etc., must be sent to a waste deposit with recycling in view. Alternatively the PVC can be incinerated at a suitable incinerating plant.
- PCB's and other electric equipment must be sent to a suitable waste deposit.

Service assistance

- If help is needed to correct any problem with the equipment, please contact your local supplier.

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Manuals delivered with the processor

Service manuals

The manuals listed below are for service technicians only. In addition the service technicians will need the manuals listed opposite as "User Manuals".

Processor Installation Manual (1)

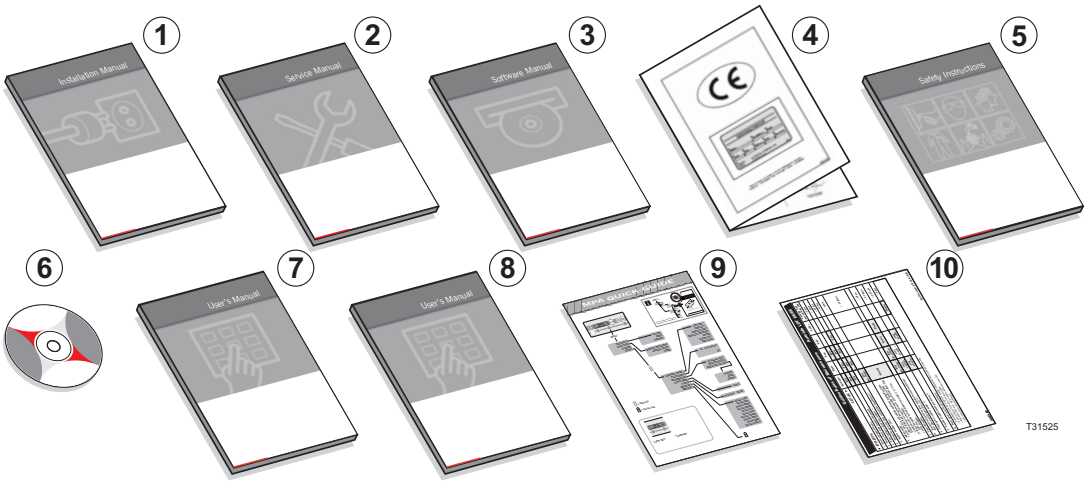
Language: English
Contents: Installation of the processor

Processor Service Manual (2)

Language: English
Contents: Technical Specifications
Functional Description
Service Information
Service Maintenance
Trouble Shooting
Spare Parts
Electrical Diagrams

MPA Service Information (3)

Language: English
Contents: Menu structure (service menus)
Control Panel, Service Information,
Configuration, Calibration Procedures



User manuals

CE Declaration Of Conformity (4)

Language: Various
Contents: Survey of the directives to which the products conform

Safety Instruction Manual (5)

Language: Various
Contents: General Safety Information

User Manual CD (6)

Language: 4
Contents: Processor User Manual (7) and MPA Control Panel manual (8)

Processor User Manual (7)

Print from the CD (6).
Contents: Operating and cleaning procedures.

MPA Control Panel (user manual) (8)

Print relevant language from the CD (6).
Contents: Functional description
Menu structure (user available)
Operation and programming
Alarm list

MPA Quick Guide (9)

Language: English
Contents: Survey of Control Panel User Functions

Cleaning Quick Guide (10)

Language: 4
Contents: Quick overview guide to cleaning procedures.
Use the Processor User Manual for detailed guide to cleaning procedure.

Keep the manuals with the machine for reference at all times.

Part 1: Technical specifications

General environmental information

The processor does not contain

- Ozone depleting substances according to Montreal protocol.
- Asbestos.
- Polychlorinated biphenyl or Poly- Cyclohexylenedimethylene Terephthalate.
- Mercury.
- Cadmium.
- Lead as additive to plastic parts.

Plastic parts

Significant plastic parts are marked according to ISO 11469.

Batteries

No batteries in this equipment.

End of life

Estimated product life:	10 years
Spare parts and service period:	7 years after last sales.

Packaging

Plastic packaging materials are marked according to ISO 11469.

Noise emission

Acoustical noise according to ISO 11201: 1996

Sound pressure level	
Operational mode	65 dB
Stand-by mode	55 dB

Chemical emissions

Ozone: 0 mg/m^3
Dust: 0 mg/m^3
Styrene: 0 mg/m^3

Heat emissions

Operation: 3300 W (11200 BTU/hour)
Stand-by: 750 W (2560 BTU/hour)

Mechanical specifications

Performance

		68 models	85 models
Plate types		Single sided silver based offset plates.	
Plate width	Min. - Max.	311 - 675 mm (12.2 - 26.6”)	311 - 850 mm (12.2 - 33.5”)
Plate length	Min.	290 mm (11.4”)	
Plate thickness	Min. - Max.	0.15 - 0.30 mm (0.006 - 0.012”)	
Plate speed		40 - 120 cm/min. (15.7 - 47.2“/min.)	

Temperatures

		68 models	85 models
Developer	Min. - Max.	20 - 40 °C (68 - 104 °F)	
Wash	Min. - Max.	20 - 40 °C (68 - 104 °F)	
Finisher	Min. - Max.	20 - 50 °C (68 - 122 °F)	
Dryer, process	Min. - Max.	20 - 60 °C (68 - 140 °F)	

Tank volumes

	68 models	85 models
Developer	6.0 l (1.6 US gal.)	8.5 l (2.4 US gal.)
Wash	15.0 l (4.0 US gal.)	15.0 l (4.0 US gal.)
Rinse	4.8 l (1.3 US gal.)	6.7 l (1.8 US gal.)
Finisher	4.0 l (1.1 US gal.)	5.5 l (1.5 US gal.)

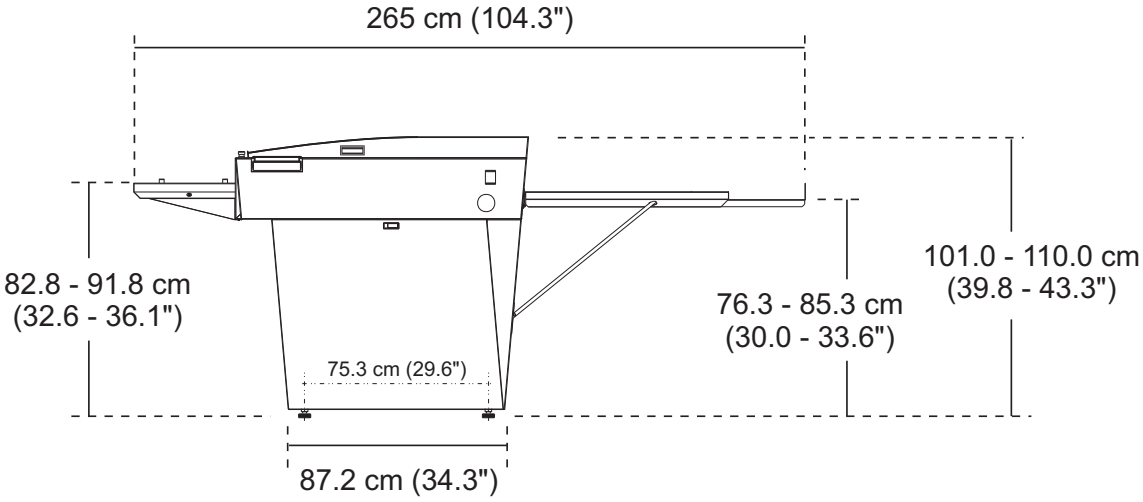
Water Supply

		68 models	85 models
Tap water supply	Min.- Max.	1 - 6 bar (15 - 87 psi)	
Tap water connection	EUR US	3/4"RG 11.5NH x 5m 3/4" x 3/4" x 3.5m	
Noise emission	Max.	57.3 dB	

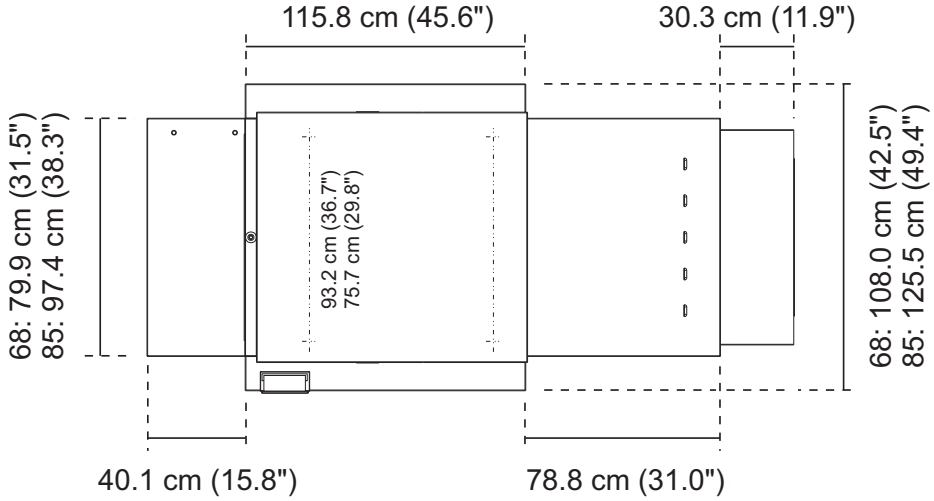
Dimensions and Weights

Dimensions

Side view



Top view



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Weights

	68 models	85 models
Shipping	approx. 350 kg (770 lbs)	388 kg (855 lbs)
Empty	approx. 275 kg (610 lbs)	307 kg (680 lbs)
With liquids	approx. 300 kg (660 lbs)	345 kg (760 lbs)

Electrical specifications

	68 models	85 models
Power Supply **EUR-models**	3W + N + PE, ~400V / 3x11 Amps, 50-60 Hz	
US-models	Single phase, 2W + PE, 230V / 2x20 Amps, 50-60 Hz 3 phases, 3W + PE, 230V / 3x17 Amps, 50-60 Hz	
JAP-models	Single phase, 2W + PE, 200V / 2x20 Amps, 50-60 Hz 3 phases, 3W + PE, 200V / 3x17 Amps, 50-60 Hz	
Voltage tolerances	± 10%	
Power Consumption **EUR-models Max.** **US-models Max.**	5000 Watts 5000 Watts	
Heat dissipation	Average stand-by: Approx. 750 Watts ~ 2560 BTU/hour Average operation: Approx. 3300 Watts ~ 11200 BTU/hour	

Part 2: Functional description

General

The basis processor contains four major sections as described below.
(See illustration.)

Developer

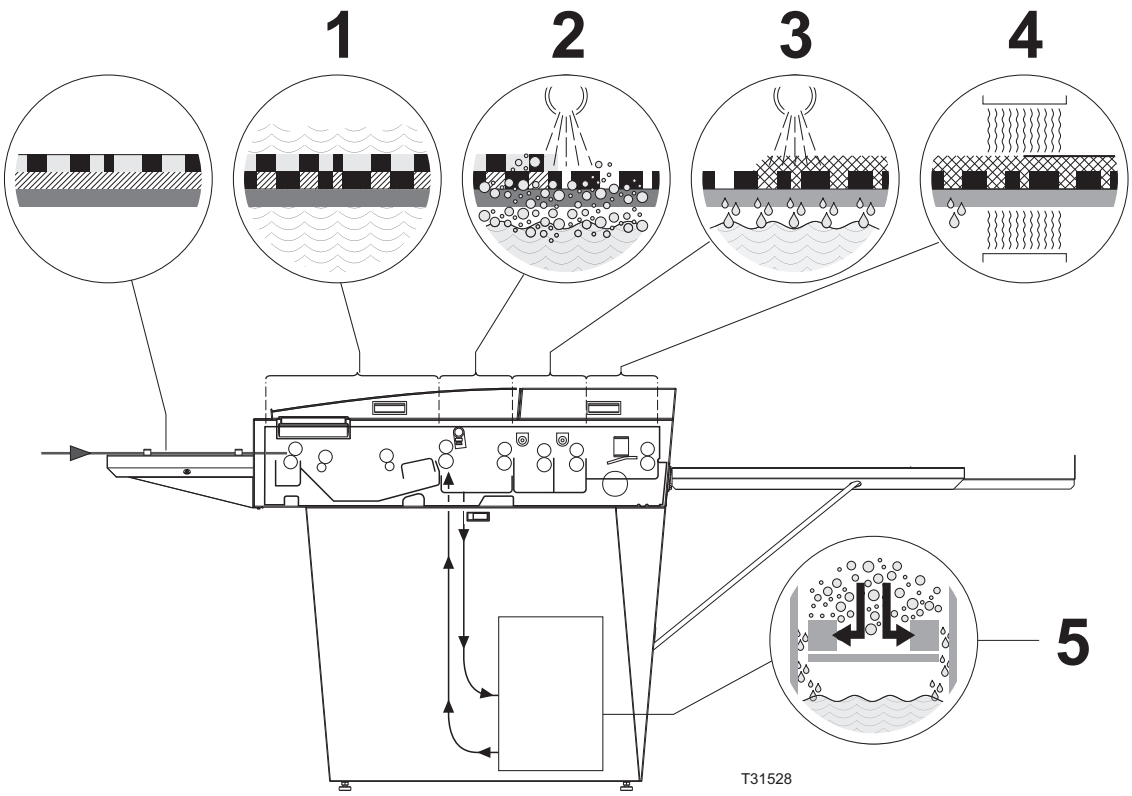
(1) : The developing process activates exposed silver by fixing it inside the emulsion layer while unexposed silver is transferred to be fixed on the aluminum surface.

Wash

(2) : Washing off emulsion layer from the plate. The wash section reuses water form the wash unit **(5)** which continuously circulates the water. As a result of the wash process the wash water contains a high concentration of silver particles.

Rinse/finisher

(3) : Rinse with solution cascading from the finisher section and application of a thin layer of finisher onto the developed and washed plate to protect it from oxidation, dirt, fingerprints etc., and to make the unexposed silver areas ink acceptant.



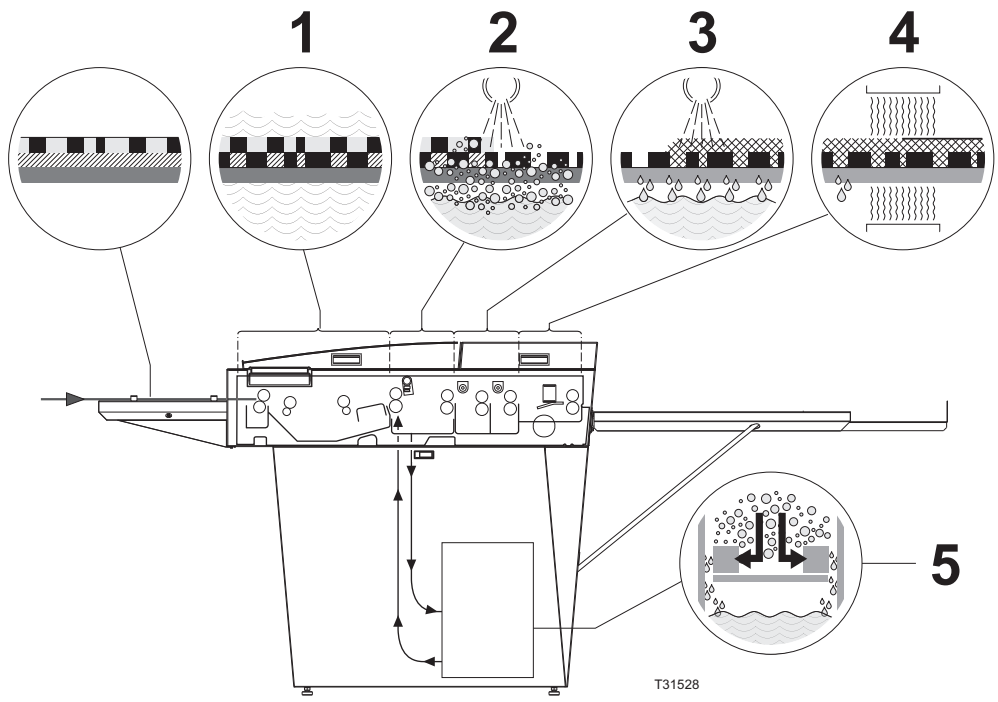
Dryer

(4) : Drying of the plate to ensure immediate handling of the plate.

Wash anti-foam unit

(5) : Water from the wash section is circulated through the wash unit for demolition of the foam created during the wash process.

The processor sections are described in detail on the following pages.



Control panel

Processor functions, settings and alarms are controlled from the control panel placed on the right side of the processor.

The control panel functions are described in the **MPA Control Panel manual** delivered on the enclosed CD.

Developer section

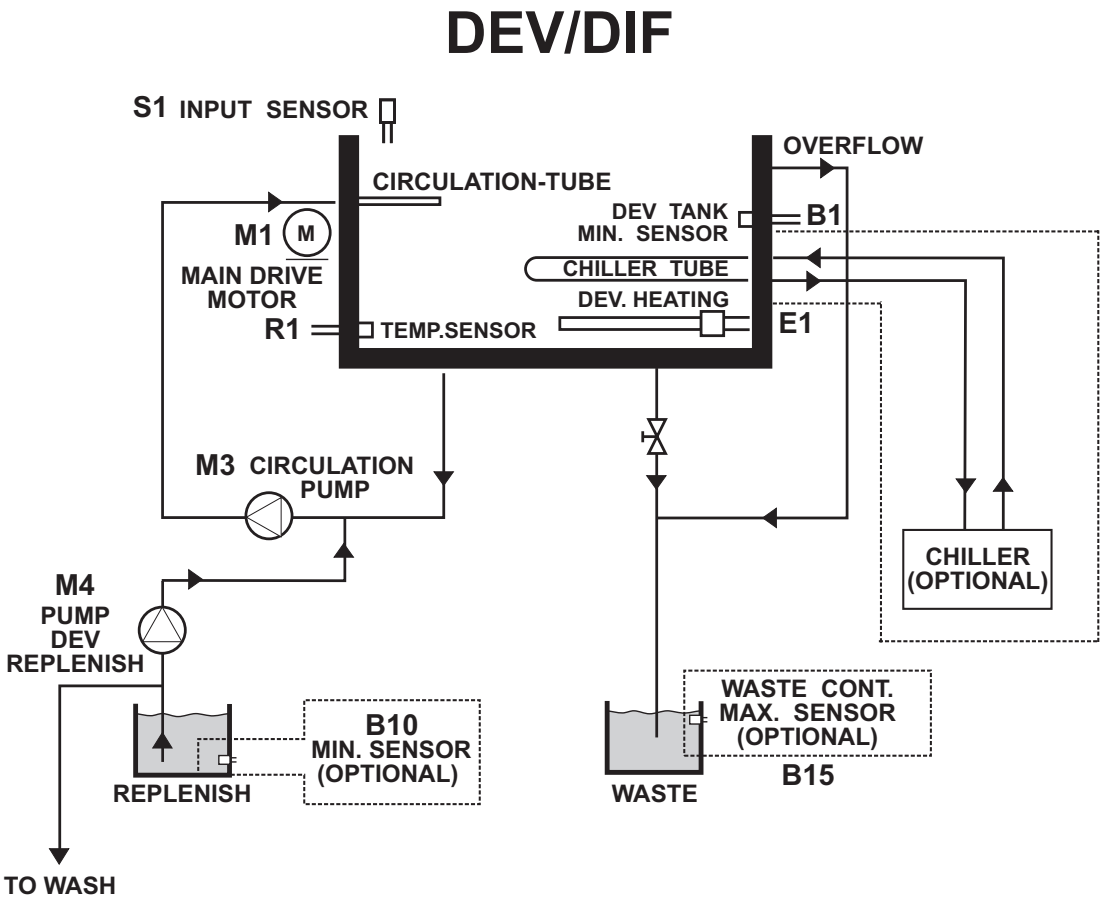
In the developer section the plate is developed.

Circulation

A circulation pump recirculates the developer in the section.

Level control/temperature

The developer bath is equipped with a min. level detector circuit, and to keep the temperature in range a heater, a thermostat and for some models a chiller unit connected to a heat exchange unit. The chiller unit is a closed system in which water is cooled and circulated through the heat exchange unit.



Replenishment/anti-oxidation system

The replenishment system automatically adds fresh developer to the developer section to compensate for chemicals expended during processing and for lost activity caused by plate development.
The processor measures the plate size to determine the correct amount of replenisher for each plate.

The time replenish system adds fresh developer to the developer section to compensate for lost activity caused by oxidation and evaporation.

The replenishment/anti-oxidation developer is added to the section by means of a pump.

Priming of developer system

Each time main power has been turned off or a replenishment container has been replaced the processor automatically starts priming when switched into stand-by mode.

The priming ensures that air traps in the circulation system are removed:

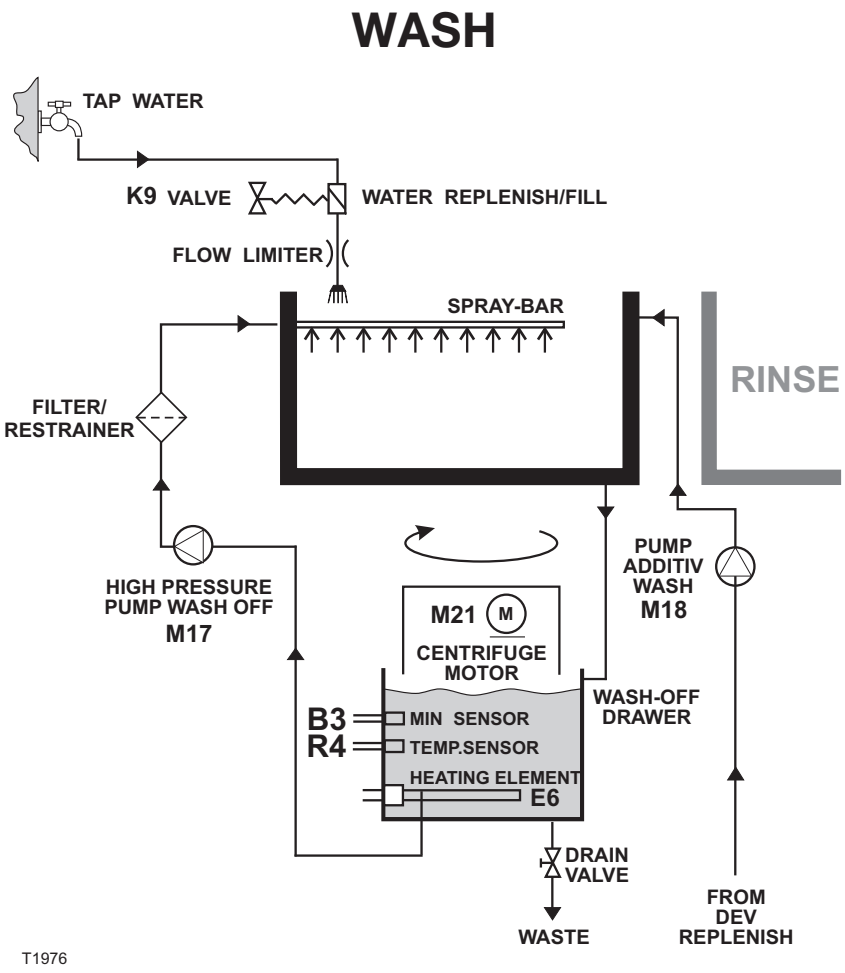
- 250 ml of replenishment is pumped into the circulation system.
- The circulation pump will stop and start for 10 sec. and 20 sec. respectively, three times in total.
- After priming the processor is ready to process.

Wash section

In the wash section the exposed emulsion is washed off the plate.
The water is applied to the plate through a spray-tube above the plate.

Wash is based on water of which 2% is developer solution automatically added from the developer replenishment system. The small amount of developer in the wash water will prevent build-up of algae in the wash tank.

The processor uses the water from the wash anti-foam unit (see description below) and fresh tap water.



Wash anti-foam unit

The wash section is connected to the wash anti-foam unit in a closed system.
The wash water is applied on the plate and recirculates to the anti-foam unit.
A centrifuge removes foam that is generated in the anti-foam unit.

The anti-foam tank is equipped with a heating element and a temperature sensor to keep the water temperature in range and a min. level sensor to control the water level.

Rinse and finisher section

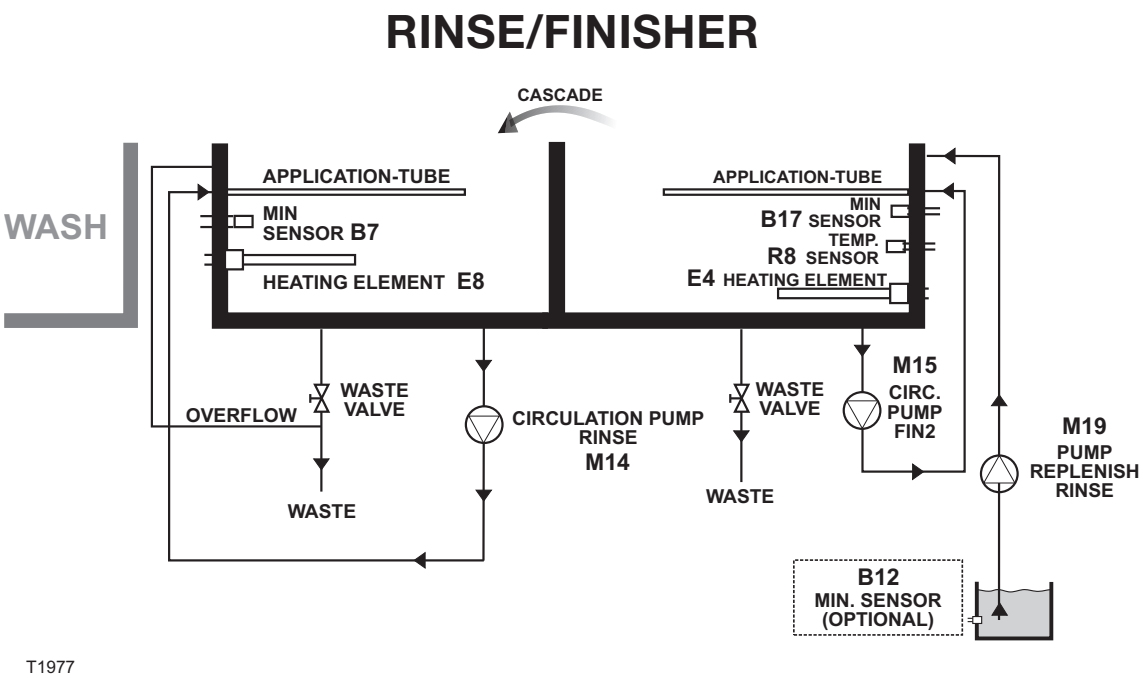
Rinse section

In the rinse section the plate is rinsed off with finisher solution cascading from the finisher section.
The rinse section is equipped with a min. level sensor and a heating element to keep the temperature in range.

Finisher section

In the finisher section the fresh and clean finisher solution is applied in a thin layer to the developed and washed plate to protect it from oxidation, dirt, fingerprints etc. and to make the fixed silver areas on the plate ink acceptant.
Later, when the plate is fixed in the printing machine, the layer will be rinsed off.

The finisher section is equipped with a min. level sensor, a temperature sensor and a heating element to keep the temperature in range.
The bellow pump will keep the appropriate finisher level and during processing the excess finisher will cascade through an overflow opening into the rinse section.



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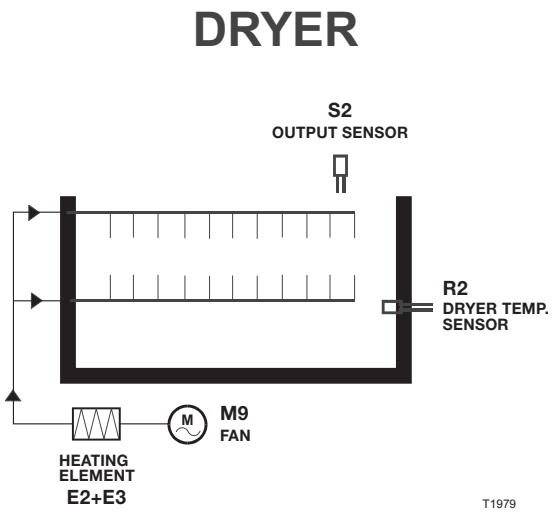
Circulation

When processing, pumps constantly circulates the solution in the finisher and the rinse sections into the distributing tubes and onto the plate.

Dryer section

In the dryer section the plate is dried, and so further handling of the plate is possible immediately after it exits the processor.

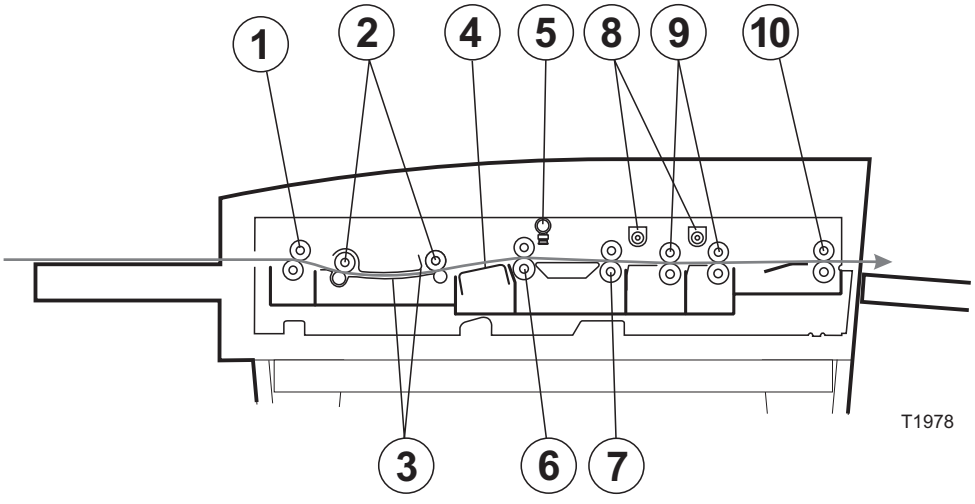
A fan blows hot air through a pair of air tubes and dries the plate on both sides.



Transport system

The plate is transported through the processor by a series of rollers and roller guides. The rollers are driven by a drive motor and a worm gear drive system.

The rollers **(1)** at the developer section entrance always run dry to ensure a homogeneous development. The roller pairs **(2)** and guides **(3)** ensure that the plate is transported correctly through the developer solution and the guide **(4)** leads the plate to the entrance rollers **(5)** in the wash section.



In the wash section the exposed emulsion is washed off the plate by means of the spray bar **(6)**. The wash section entrance rollers **(5)** prevents that the wash water runs back into the developer section. Water is squeezed off the plate by the wash section exit rollers **(7)**.

The rinse and finisher sections each contain a spray tube **(8)** and a pair of rollers **(9)**. The exit roller pair **(10)** leads the plate when dry out of the processor.

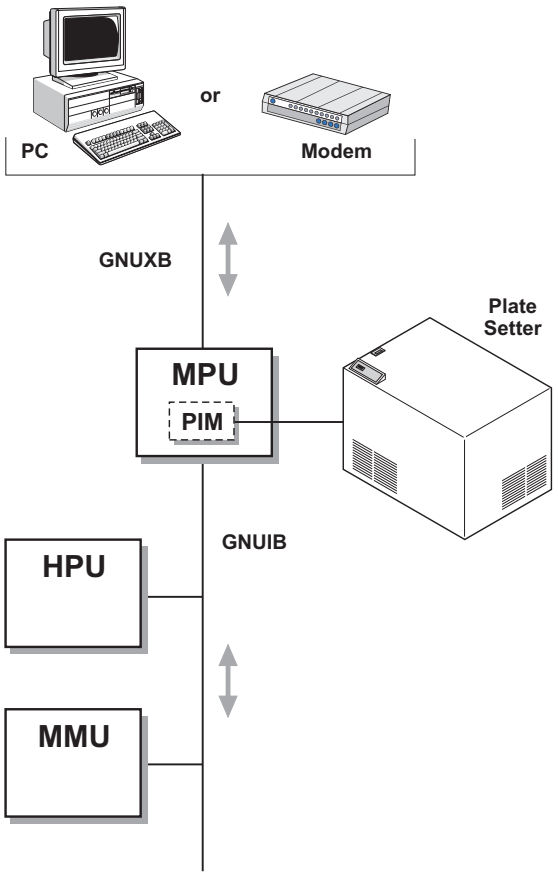
Electronic control

The electronics consists of:

MPU-board

The whole electronic system is controlled by the MPU-board.
It has two separate communication lines (buses): **GNUIB** for all internal communication in the processor.
GNUXB for external communication between the processor and a PC or modem.

The MPU-board can be equipped with a **PIM** (Plate setter Interface Module) for the communication between the processor and a Plate setter in case of an online installation.
(The PIM board is standard in some processor models).



Man machine interface unit (MMU)

The MMU-board is the Control Panel board from which the user operates the processor.
If necessary it is possible to add extra MMU-modules.

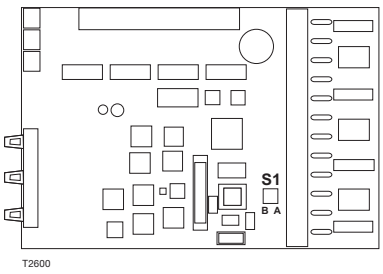
HPU-board

The HPU-board holds all the high voltage in- and outputs for the control of heaters, motors etc.

On the HPU-board is a switch S1 for HPU/HCU settings.
The setting should be:

Switch S1 A : Not used

Switch S1 B : Off: HPU
On: Not used



Switch S1 A : Not used
Switch S1 B : OFF = HPU
ON = Not used

Part 3: Maintenance

General

This chapter holds the special service information such as adjusting procedures, cleaning of pumps etc.

For software related service information please refer to the separate "MPA Service Information" manual.
For user related maintenance and cleaning procedures refer to the Plate Processor User Manual.

WARNING!

Please note that where this label appears on the processor electrical shock hazard still exists when main switch is turned off.

WARNING!

When performing any service, maintenance, calibration, or trouble shooting etc. it may be necessary to override the function of the processor's interlock switches.

In these cases please be aware, that the processor's JOG-function is still active, making the drive system run idle at intervals.

There will be NO advice when the JOG function starts.

Safety check

Below described safety check should be performed at least once a year.

Electrical

(Refer to the electrical diagrams in the back of this manual).

- **Check proper function of:**
  - Lid switches. Processor must stop when just one of the switches are deactivated. The "COVER OPEN" message must appear in the control panel display.
  - Centrifuge switch. The processor must stop when the drawer is pulled out. The "COVER OPEN" message must appear in the control panel display.
  - Main switch. Processor must turn off when set to "0".
  - Emergency stop. The processor must turn off when activated.

Mechanical

- **Check proper function/location of:**
  - Side fenders, left/right. Make sure the fenders are properly secured with 2 screws each.
  - Lower side panels, left/right.
  - Top covers, front/rear.
  - Inner covers.
  - Covers, electronics boxes. Make sure covers are secured by screws.

Fuses

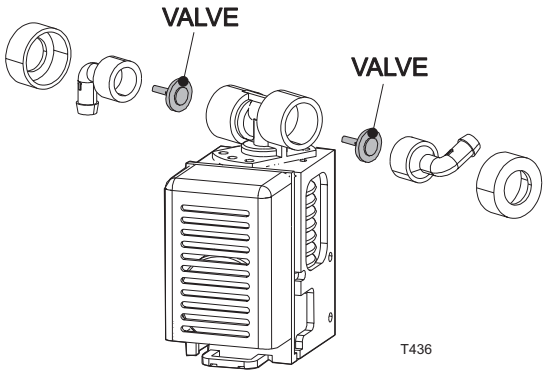
The fuses for the various functions are located in the electronics cabinet behind the upper right fender.
All fuses are placed on the fuse PCB behind the cover.
A fuse label on the inside of the cover for the wiring box shows the position and rate of the fuses.

When changing a fuse, first switch off all power to the machine.
Always ensure that the new fuse is of the correct rating according to the label.

Cleaning

Cleaning of valves in the replenish pumps

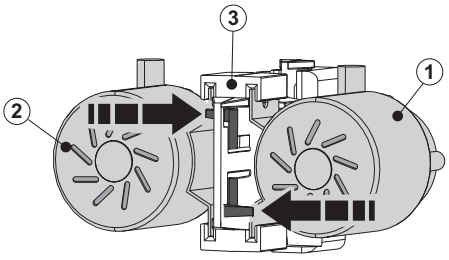
If a replenishment pump ceases to function properly, run it with some warm water in order to clear the pump of chemicals.
If this does not help, take the pump apart and clean both of the small valves in warm water.

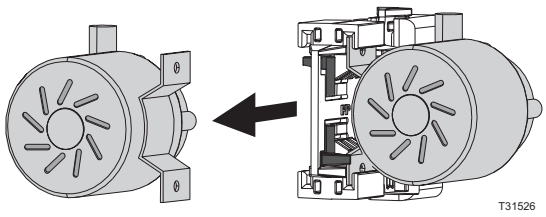


Dismounting small circulation pumps

Dismounting of the rinse **(1)** and finisher **(2)** circulation pumps from the pump bracket **(3)** is made without use of tools. Simply press the snap locks and release the pumps.

Cleaning of the circulation pumps is described on the next page.

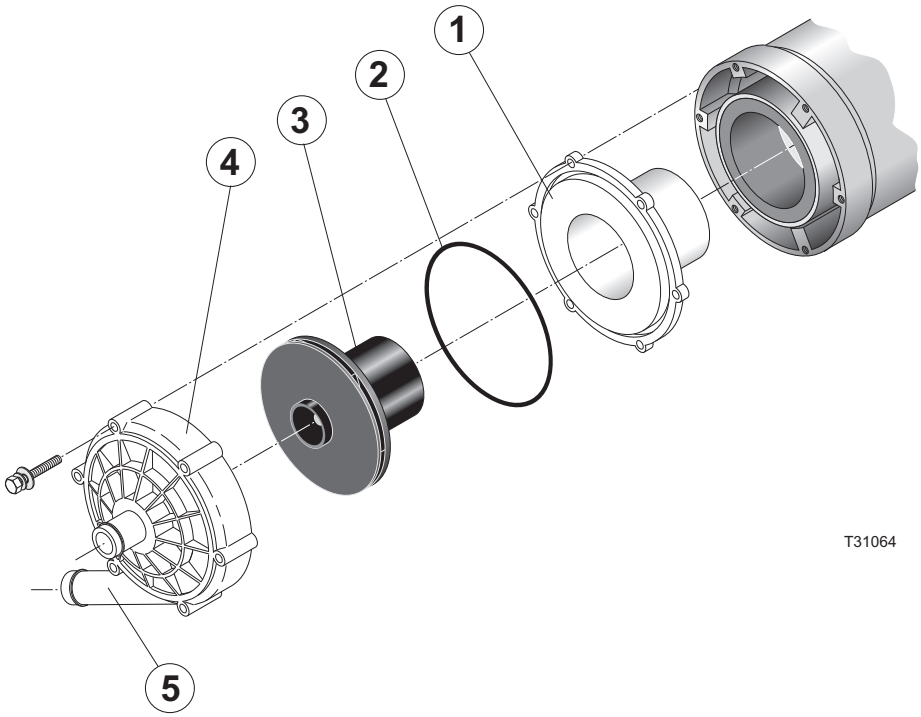




Cleaning of the circulation pumps

If the circulation pump ceases to function properly clean the pump following this description.

- Cut off the power to the unit by removing the top cover.
- Empty the tank section.
- Dismount the hoses from the pump. Be careful not to spill the chemicals on the floor.
- Note the position of the outlet nozzle **(5)**.
- Dismount the pump.
- Dismount the cover **(4)** and pull out the impeller **(3)** and the impeller housing **(1)**.
- Clean the inside of the cover, the impeller and the impeller housing in warm water.
- Reinstall in reverse order, observing that the outlet nozzle **(5)** of the cover is placed as it was before dismounting it, and that the O-ring **(2)** is placed correctly in the groove of the impeller housing **(1)**.



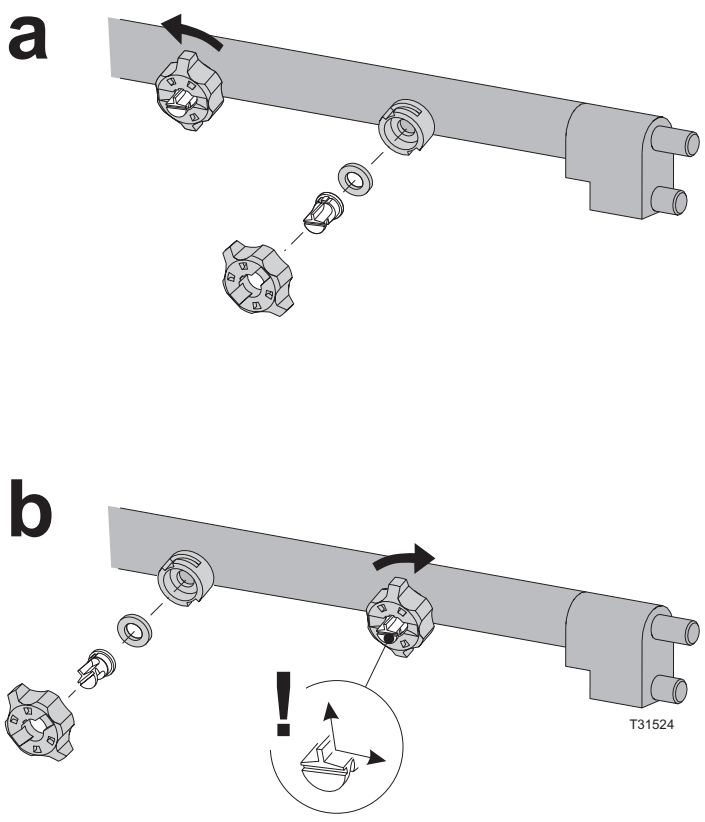
The wash spray bar

The water distribution from the nozzles is sensitive and important for a proper wash-off function. Clean with warm water and compressed air (blow from the inside and out). Take the nozzles apart like shown below **(a)**.

If a nozzle is blocked by dirt never use a paper clip or similar to clean it!

If stribes appears on the processed material it is most likely blocked spary nozzles. In that case clean the spray bar and spray nozzles as described above.

Make sure to assemble like shown below (b).



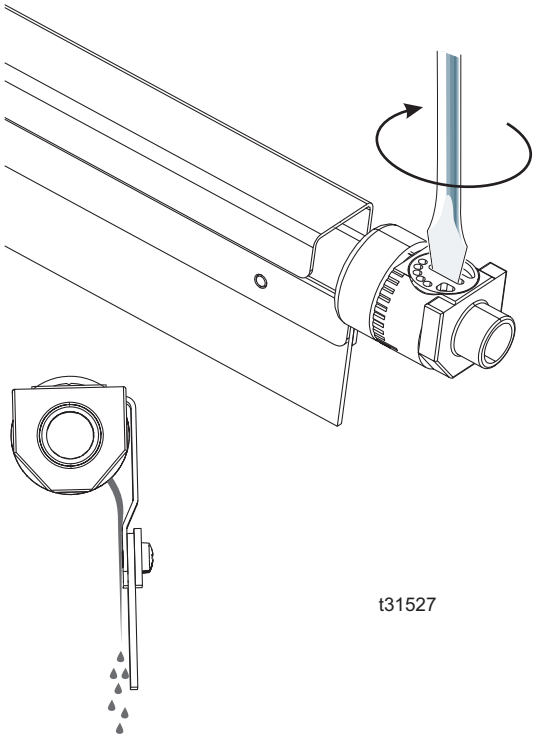
Rinse and finisher spray tube

Adjustment

The pressure in the rinse and finisher spray bars can be adjusted to obtain the best possible application of solution to the plate. Pressure is adjusted as shown in the illustration below.

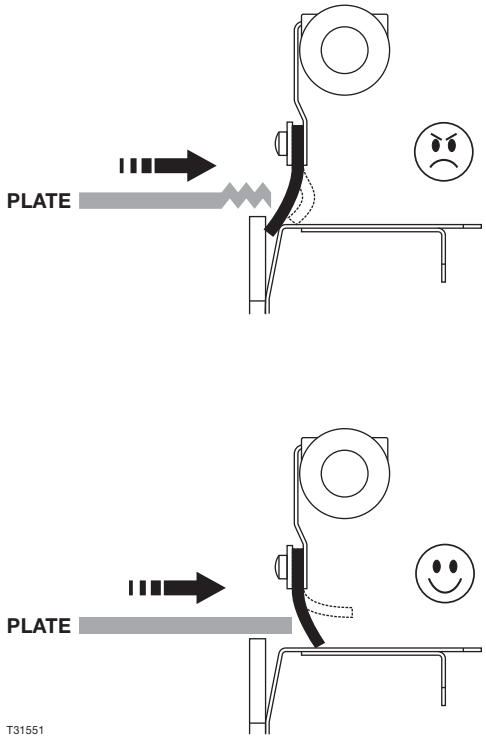
The valve is fully open from the factory.

As part of a cleaning process the spray tubes should be cleaned with hot water to remove potential blocking of the holes.



Mounting the spray tubes

It is very important that the spray tubes are mounted according to the illustration below.

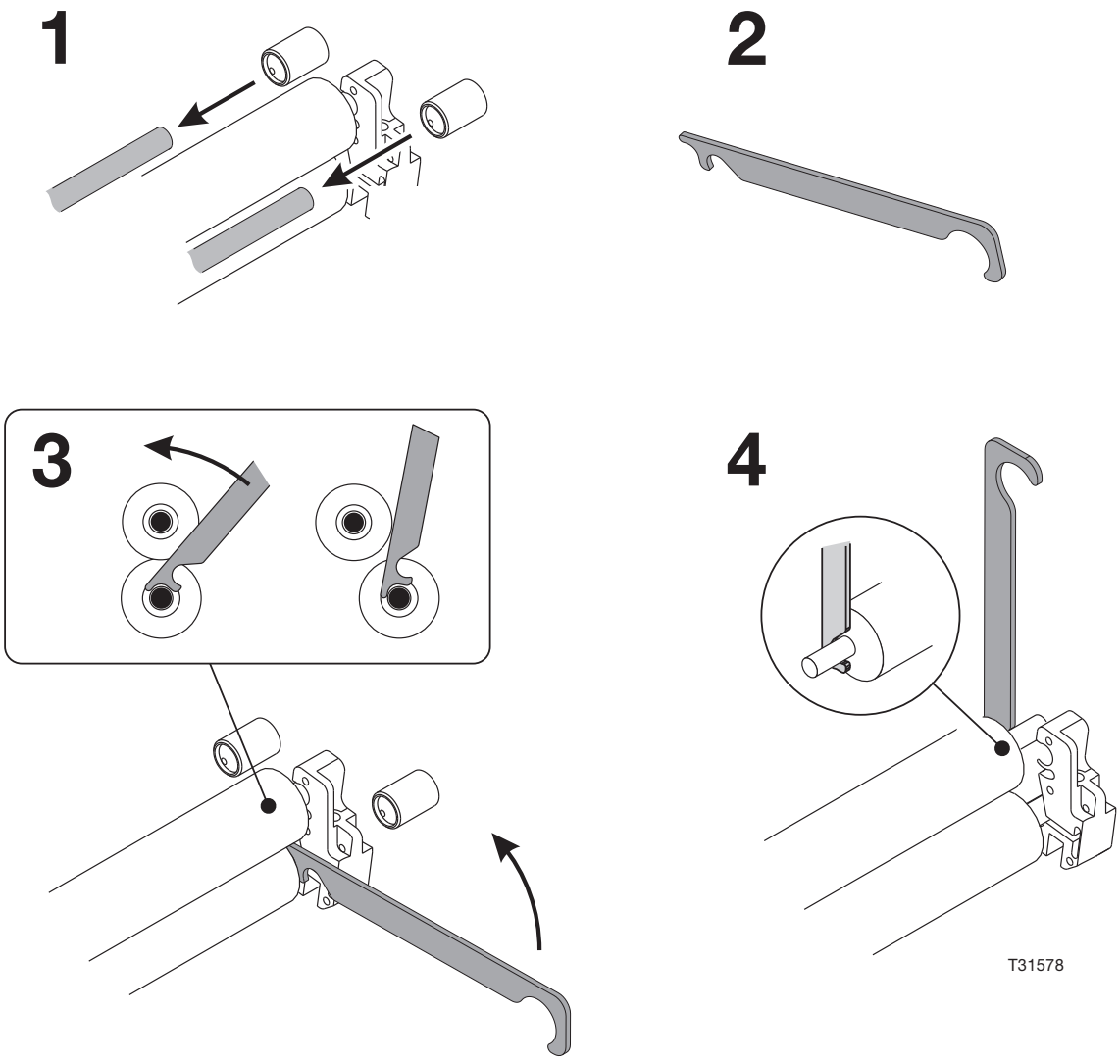


Remove/install brush rollers

Removing brush rollers

Use the special tool (1) when removing brush rollers. Follow the instruction below:

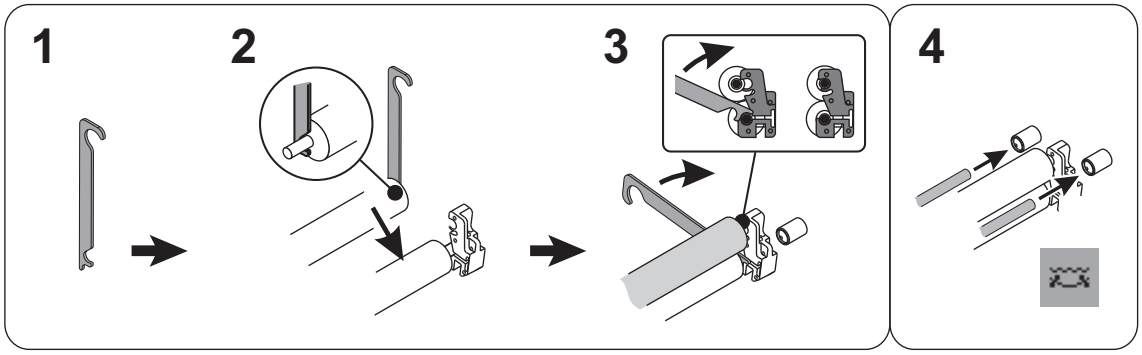
- Stand to the right of the processor.
- Remove the spray tubes (2).
- Insert the roller key between the upper brush roller and the lower support roller as shown (3).
- Lift up the roller key (4) and force the upper brush roller out of the bearing.
- Repeat (3) and (4) for the gear end of the brush roller.
- Use the roller key to hold the brush roller (5) and lift the brush roller out of the bath/tank (6).



Installing brush rollers

Inside the top cover is mounted a label showing the roller configuration. Each roller is marked with a small number. Install the rollers by referring to the roller numbers on the label. Follow the instruction below:

- Use the special tool (1) when mounting brush rollers.
- Stand on the right side of the processor and hold the brush roller with both hands.
- Place the gear end of the brush roller on the gear of the support roller in the left side of the tank wall.
- Use the roller key to lower the right end of the roller into the bath/tank (2).
- Insert the roller key between the upper roller and the lower roller as shown (3).
- Press the roller into the bearing by pressing the roller key upwards (4).
- Repeat (3) and (4) for the gear end of the brush roller.
- Mount the spraytubes (5).



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Part 4: Trouble shooting

General

If the processor does not work properly, refer to the following pages to find the paragraph that comes closest to your problem.

The trouble shooting guide is divided into 2 sections:

a. Problems with the processor
b. Problems with processed material

For information about alarm messages see the "MPA Control Panel" manual.

For cleaning and maintenance subjects see the processor user manual and chapter 3 in this manual.

Use the "Test functions" parameters on the control panel to test individual components. See the "MPA Service Information" manual.

The electrical diagrams are located in Appendix A.

To change a fuse, switch off all power to the machine first.
Always ensure that the new fuse is of the correct rating according to the diagram.

WARNING!

When performing any service, maintenance, calibration, or trouble shooting etc. it may be necessary to override the function of the processor's interlock switches.

In these cases please be aware, that the processor's JOG-function may still be active, making the drive system run idle at intervals. There will be no "bip advise" or display message when the processor is in stand-by mode or process mode!

Before starting trouble shooting

IMPORTANT!

Plates and chemicals are very sensitive materials and correct storage is vital to obtain a satisfactory production result. Incorrect storage may very well result in unsatisfactory processing quality etc.

Contact your local supplier for information about storage requirements for plates and chemicals.

Before making adjustments of the equipment make sure that incorrect storage of plates and chemicals can be excluded.

Settings for temperatures, replenish and speed as shown on the "Cleaning/Settings" quick guide are mandatory and are to be considered a condition for the Agfa Accreditation of the plate processor for the Agfa Lithostar Plates.
It is recommended that the Plate Setter Device is calibrated once the settings has been confirmed in the processor.

Problems with the processor

Symptom	Probable cause	Remedy
NO FUNCTION ACTIVE	• Mains switch turned off or power cable not connected to main power outlet. • Fuse(s) blown.	• Connect cable to main power outlet and/or turn main switch on. • Replace fuse.
PROCESSOR CANNOT INITIALIZE	• Configuration error. (If main power has been cut off temporarily the processor switches to off mode - green led flashes). • Defective PCB. • Cables not properly connected.	• Reload software. • Replace PCB. • Check cables and make proper connections.
MACHINE WILL NOT START UP	• MMU-PCB defective.	• Replace defective part.
MACHINE DOES NOT START WHEN A PLATE IS INSERTED	• "MANUAL START" program runs. • Input sensor (s) defective.	• Wait until program has finished. • Replace defective sensor.
NO WASH WATER ALTHOUGH MACHINE IS IN "PROCESS" MODE	• Electronics defective. • Water tap closed. • Water solenoid valve defective. • Water solenoid valve filter clogged. • Malfunction of pump in wash anti-foam unit. • Filter valve closed. • Level sensors in wash anti-foam unit dirty/-defective.	• Replace defective electronics. • Open water tap. • Replace valve. • Clean filter. • Check pump and repair or replace whatever is necessary. • Open valve. • Check sensors and clean/-replace whatever is necessary.
DRYER BLOWER WORK, HEATER DOES NOT	• Temperature sensor defective. • Heating element defective. • Electronics defective. • Fuse(s) blown	• Replace temperature sensor. • Replace heating element. • Replace defective electronics. • Replace fuse.
DRYER BLOWER DOES NOT WORK	• Blower defective. • Electronics defective. • Fuse(s) blown.	• Replace blower. • Replace defective electronics. • Replace fuse.

Symptom	Probable cause	Remedy
NO FINISHER ALTHOUGH MACHINE IS IN "PROCESS" MODE	• Pump defective. • Finisher filter clogged. • Finisher container empty. • Electronics defective. • Fuse(s) blown. • Finisher hose blocked. • Pump valves blocked or defective.	• Replace pump. • Clean filter. • Refill container. • Replace defective electronics. • Replace fuse. • Clean hose. • Clean or replace valve.
FINISHER PUMP RUNS BUT NO FINISHER (NO ALARMS)	• Finisher hose blocked. • Pump valves blocked or defective.	• Clean hose. • Clean or replace valve.
DEVELOPER REPLENISHMENT PUMP DOES NOT WORK	• Pump defective. • Electronics defective. • Fuse(s) blown.	• Replace pump. • Replace defective electronics. • Replace fuse
DEVELOPER REPLENISHMENT PUMP RUNS BUT NO REPLENISHMENT	• Replenishment hose blocked. • Pump valves blocked or defective. • Replenish container empty.	• Clean hose. • Clean or replace valves. • Refill container.
REPLENISHMENT SYSTEM DOES NOT WORK ALTHOUGH THE MACHINE IS IN "PROCESS" MODE	• Electronics defective. • Replenishment parameters settings not correct.	• Replace defective electronics. • Make correct settings.
NO DEVELOPER CIRCULATION	• Developer circulation pump defective. • Replenish container empty. • Fuse(s) blown. • Replenish pump defective.	• Replace pump. • Fill replenish container. • Replace fuse. • Replace pump and make calibration.
NO WATER CIRCULATION	• Interlock switch for wash anti-foam unit drawer not activated. • Pump in wash anti-foam unit malfunctions. • Water filter clogged. • Water spray bar clogged. • Level sensor in wash anti-foam unit dirty/-defective.	• Push in the drawer as far as it goes. • Check pump and repair or replace whatever is necessary. • Replace filters. • Clean spray bar. For cleaning of the spray nozzles use compressed air. Blow from the outside in - **never opposite**. **Never pinch** the spray nozzles. • Check sensors and clean/-replace whatever is necessary.

Problems with processed material

SYMPTOM	PROBABLE CAUSE	REMEDY
PLATE IS NOT COMPLETELY DRY	• Dryer temperature is set too low. • Dryer section is malfunctioning.	• Set dryer temperature a little higher.
PLATE HAS STRIPES LENGTH-WISE OR CROSSWISE	• Defective or dirty rollers or guides. • Wash spray nozzles clogged.	• Take rollers and/or guides out, inspect and wash them. Rollers with dents or other marks must be changed. • Clean the spray nozzles. Use compressed air. **Blow from the outside in** - never opposite. Never pinch the spray nozzles
PLATE IS DIRTY	• Wash section is dirty. • Finisher wiper dirty. • Developer exhausted.	• Perform weekly cleaning as described in "CLEANING" in the processor user manual. • Clean the wiper. • Change developer.
WASHING NOT SUFFICIENT	• Wash anti-foam unit malfunctions. • Spray bar clogged. • Water circulation pump does not run. • Rollers dirty in wash section.	• See earlier in this chapter. • Clean spray bar and nozzles. Use compressed air. **Blow from the outside in** - never opposite. Never pinch the spray nozzles. • See "CLEANING OF THE PUMPS" in chapter 4. • Clean rollers.
PLATE HAS AN UNEVEN FINISHING	• Finisher container nearly empty. • Finisher rollers dirty. • Finisher distributing tube clogged or out of adjustment. • Finisher pump clogged	• Refill container. • Take rollers out and clean them. • Take tube out and rinse or readjust. • Take pump apart and clean valves.

Part 5: Spare parts

General

Spare parts kit

A small kit consisting of the most needed spare parts is delivered with the processor. For further need of spare parts please refer to the spare part lists in this chapter with iso-metric drawings, descriptions and part numbers.

Ordering spare parts

When ordering spare parts:

Please state carefully the spare part number, the specification and the number of items wanted.

Special spare parts

Some of the spare parts (covers, panels etc.) are available in different colors. In these cases please refer to Appendix A “Additional spare parts” for the correct numbers for your specific processor.

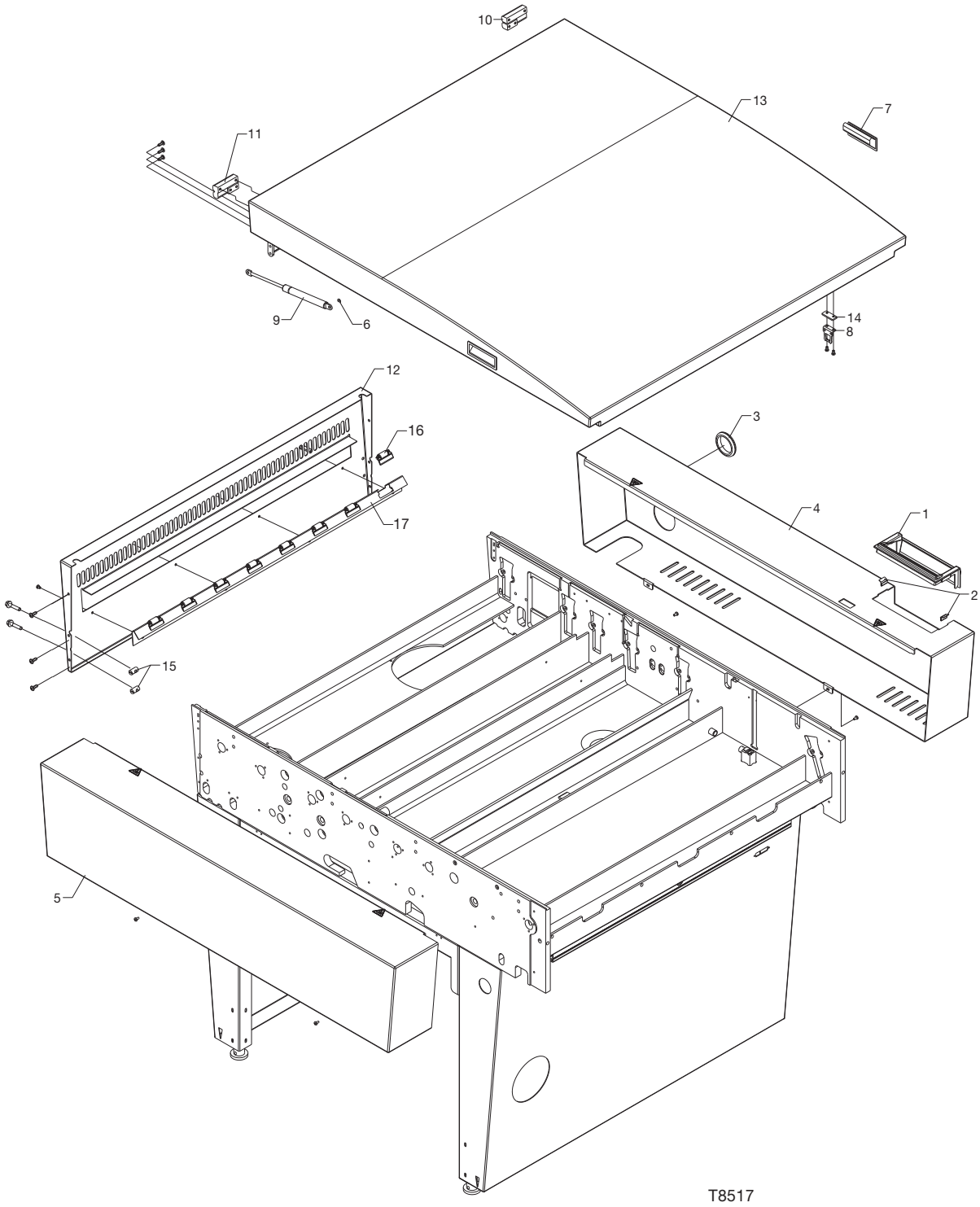
PCB's and software

IMPORTANT!

All spare part PCB's with software proms will be delivered ***without software installed***. The Service Technician must download software from a CD.

See "Electronics box" in this chapter for Software CD spare part number.

Instructions for downloading and upgrading software are stored on the software CD.



PANELS

Panels

Pos. No	68	85	Specification
Spareparts for front panel and feed table are described in the Interface Manual			
1	22859	22859	PANEL, SHADOW
2	35369	35369	CLIPS, PANEL, Z3239.5010
3	45865	45865	BUSHING, 258-68, D45/50X1.6
4			**SEE APPENDIX A**
5			**SEE APPENDIX A**
6	25823	25823	CIRCLIP D4X0.7 RA-4-411-ME DIN 6799
7	35362	35362	HANDLE, SOUTHCO TP. P2-44
8	45891	45891	ACTUATOR, SAFETY, SWITCH, AZ17/170-B5
9	10008119		SPRING, GAS, 250N, 265,5/100, 9034TD, DAMPED
		10008120	SPRING, GAS, 250N, 265,5/100, 9035TZ, DAMPED
10	45926	45926	HINGE, SOUTHCO, 96-50-510-50
11	45927	45927	HINGE, SOUTHCO, 96-50-520-50
12			**SEE APPENDIX A**
13			**SEE APPENDIX A**
14	74774	74774	SUPPORT, ACTUATOR, COVER
15	15262	15262	NUT M6/D10X18
16	87571	87571	ROLLER, W/HOLDER
17	10012806	10011480	GUIDE, EXIT, ROLLER
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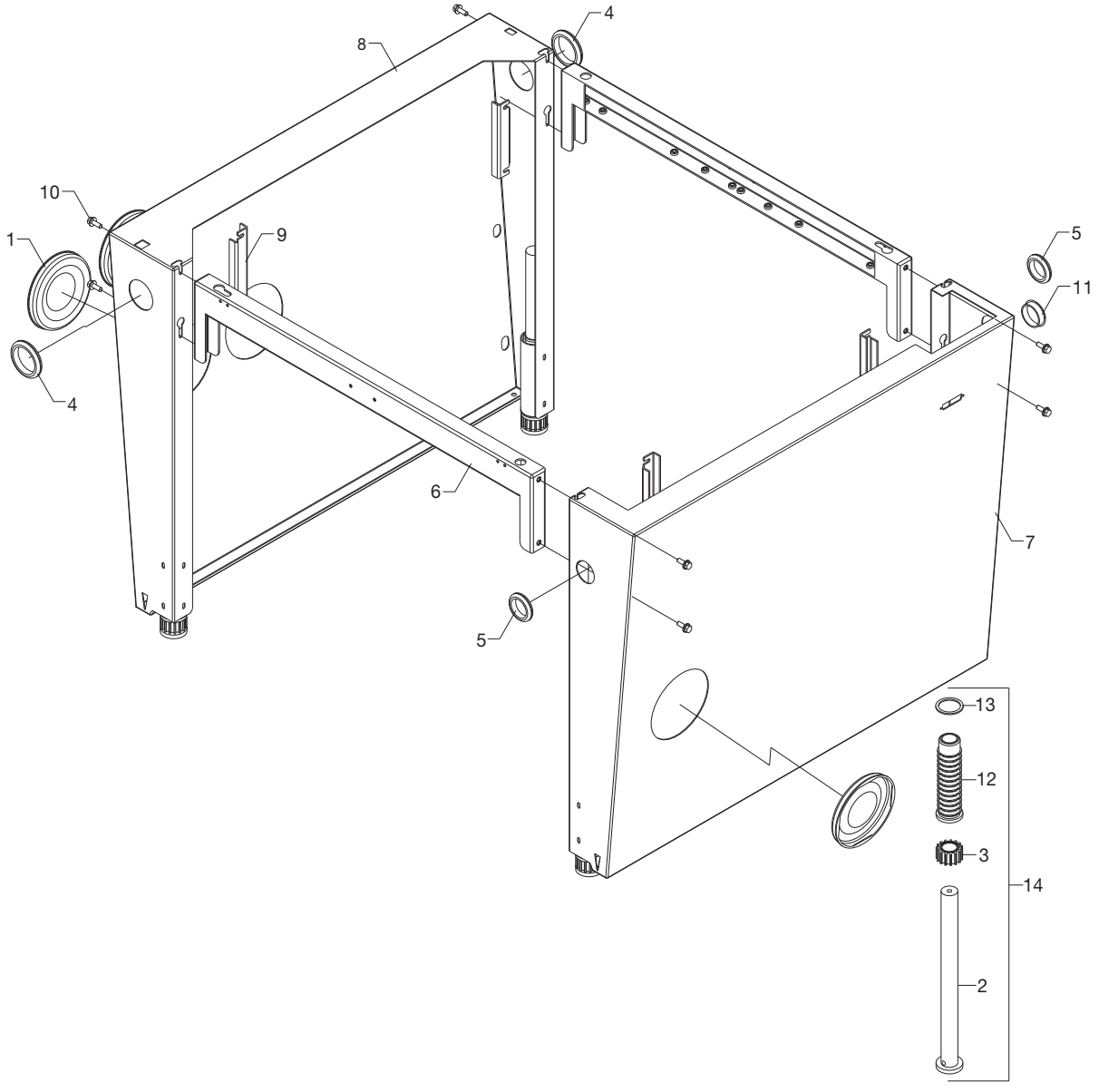

STAND

Stand

Pos. No	68	85	Specification
1	1388	1388	STOPPER D120X10
2	35359	35359	LEG, TRAPEZOID, D40, METAL
3	35360	35360	NUT, LEG, ADJ.TRAPEZOID 36-KM 1
4	45865	45865	BUSHING, 258-68, D45/50X1.6
5	0063966	0063966	BUSHING 258-66
6			**SEE APPENDIX A**
7			**SEE APPENDIX A**
8			**SEE APPENDIX A**
9	10001618	10001618	BRACKET, ATTACHMENT, STAND
10	10001424	10001424	SCREW, M6X16, HE, HFC8007
11	10007033	10007033	STOPPER, DOMED, BLANKING, D38
12	35358	35358	BUSHING, TRAPEZOID, D40X2
13	10009615	10009615	GASKET, D41/33/2
14	57173	57173	LEG, TRAPEZOID
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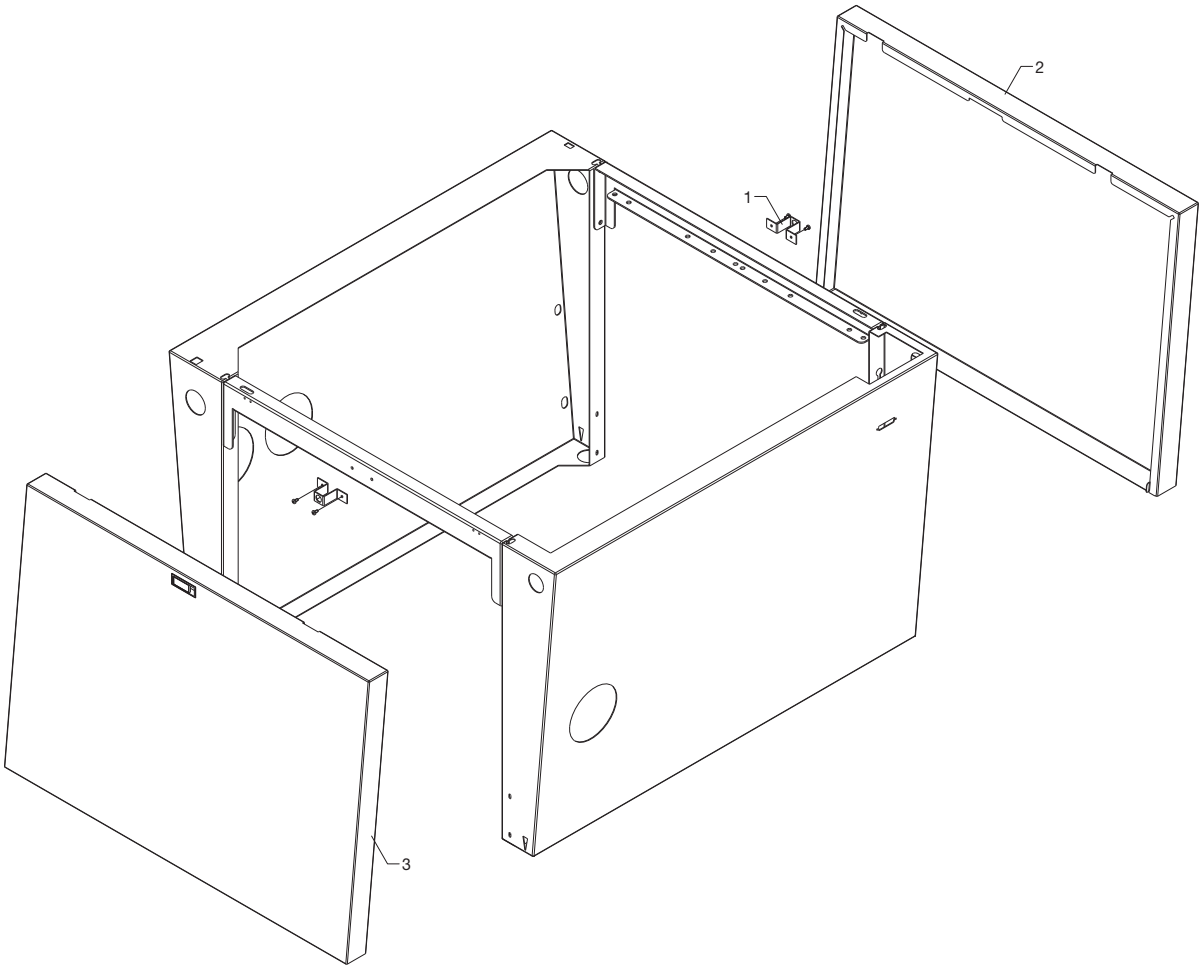

T8519

CLOSED STAND

Closed stand

Pos. No	68	85	Specification
1	50946	50946	BRACKET, LATCH
2			**SEE APPENDIX A**
3			**SEE APPENDIX A**
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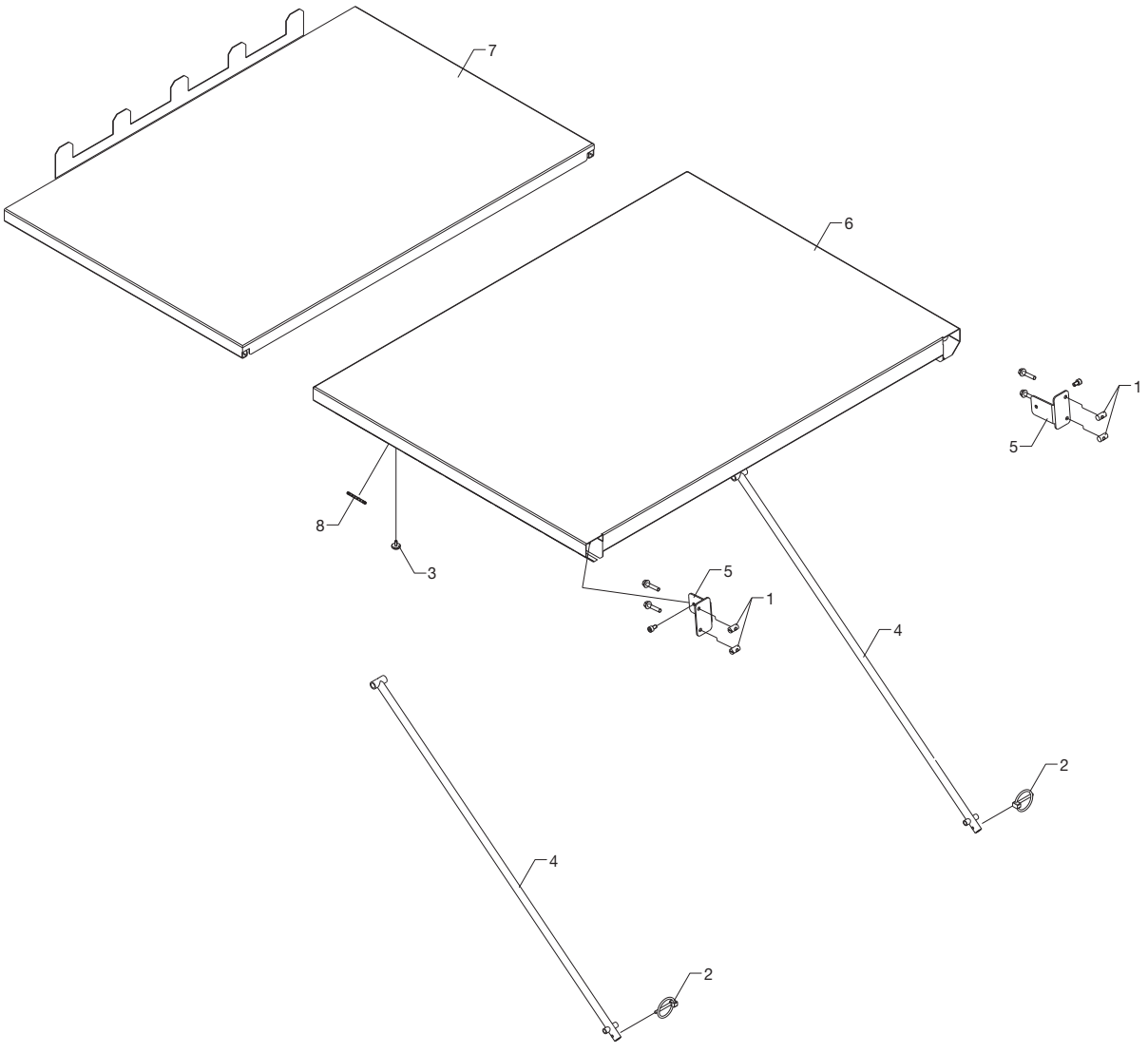

T8520

TABLE EXIT

Table, exit

Pos. No	68	85	Specification
1	15262	15262	NUT M6/D10X18
2	45804	45804	LINCH PIN D41X4.5, PLATED YELLOW
3	10004768	10004768	SCREW, FINGER, DIN 653, M4X10
4			**SEE APPENDIX A**
5			**SEE APPENDIX A**
6			**SEE APPENDIX A**
7			**SEE APPENDIX A**
8	74616	74616	EDGE, PROFILE, TABLE, EXIT
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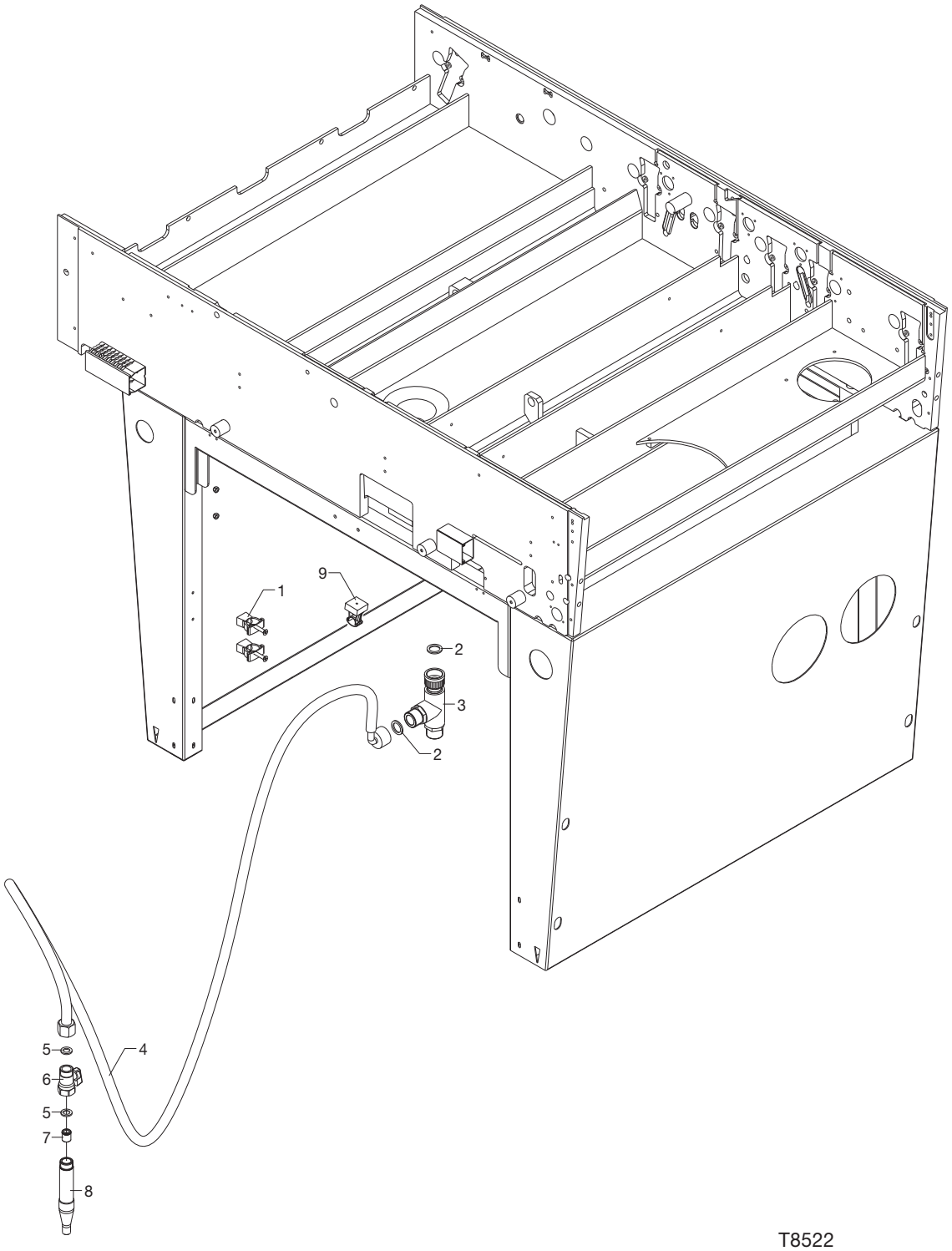

T8522

HANDSHOWER

Handshower

Pos. No	68	85	Specification
1	35315	35315	HOLDER, PIPE D20
2	74388	74388	GASKET, EPDM, SHORE70, 24X17X2
3	10002936	10002936	FITTING, HANDSHOWER
4	10003060	10003060	HOSE, 1/2"X3/4"RGX2.5M
5	45911	45911	GASKET, FIBER, 1/2", D18X12.5X2
6	0011361	0011361	FITTING, VALVE, BALL 1/2", MA/FE
7	10003029	10003029	CHECKVALVE, DW14/DN10GF
8	73901	73901	JET, SHOWER
9	45932	45932	HOLDER, PIPE, D16, W.LOCK
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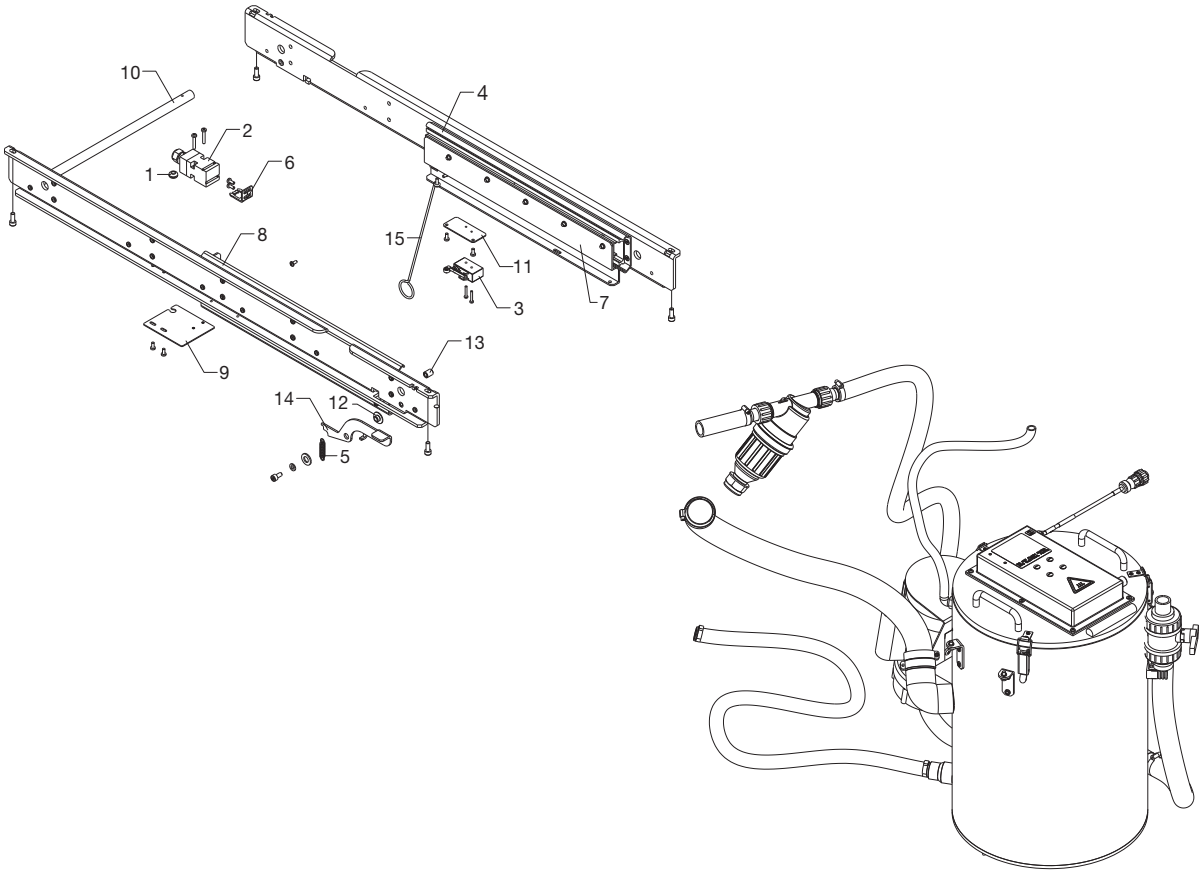

T8523

DRAWER, WASH-UNIT

Drawer, wash-unit

Pos. No	68	85	Specification
1	6295	6295	GROMMET D6/9X1.5
2	26602	26602	SWITCH, INTERLOCK, SCHMERSAL
3	36521	36521	SWITCH, BURGESS, V9NLR1
4	45830	45830	BAR, SLIDE, TITAN, D, 450/485
5	45923	45923	SPRING, DY8, DT1.2, L3795
6	53331	53331	ACTUATOR, SWITCH, SCHMERSAL
7	60953	60953	SUSPENSION, SLIDER, RIGHT
8	70312	70312	SUSPENSION, SLIDE, LEFT
9	73407	73407	BRACKET, WASH-UNIT, INTERLOCK
10	73738	73738	DISTANCE, BAR, WASH-UNIT
11	74572	74572	BRACKET, SWITCH, V9NL
12	74766	74766	BUSHING, LATCH, DRAWER, CENTRIFUGE
13	74767	74767	CAM, LATCH, DRAWER, CENTRIFUGE
14	83021	83021	LATCH, DRAWER, CENTRIFUGE
15	10004086	10004086	WIRE, HOSE, CENTRIFUGE
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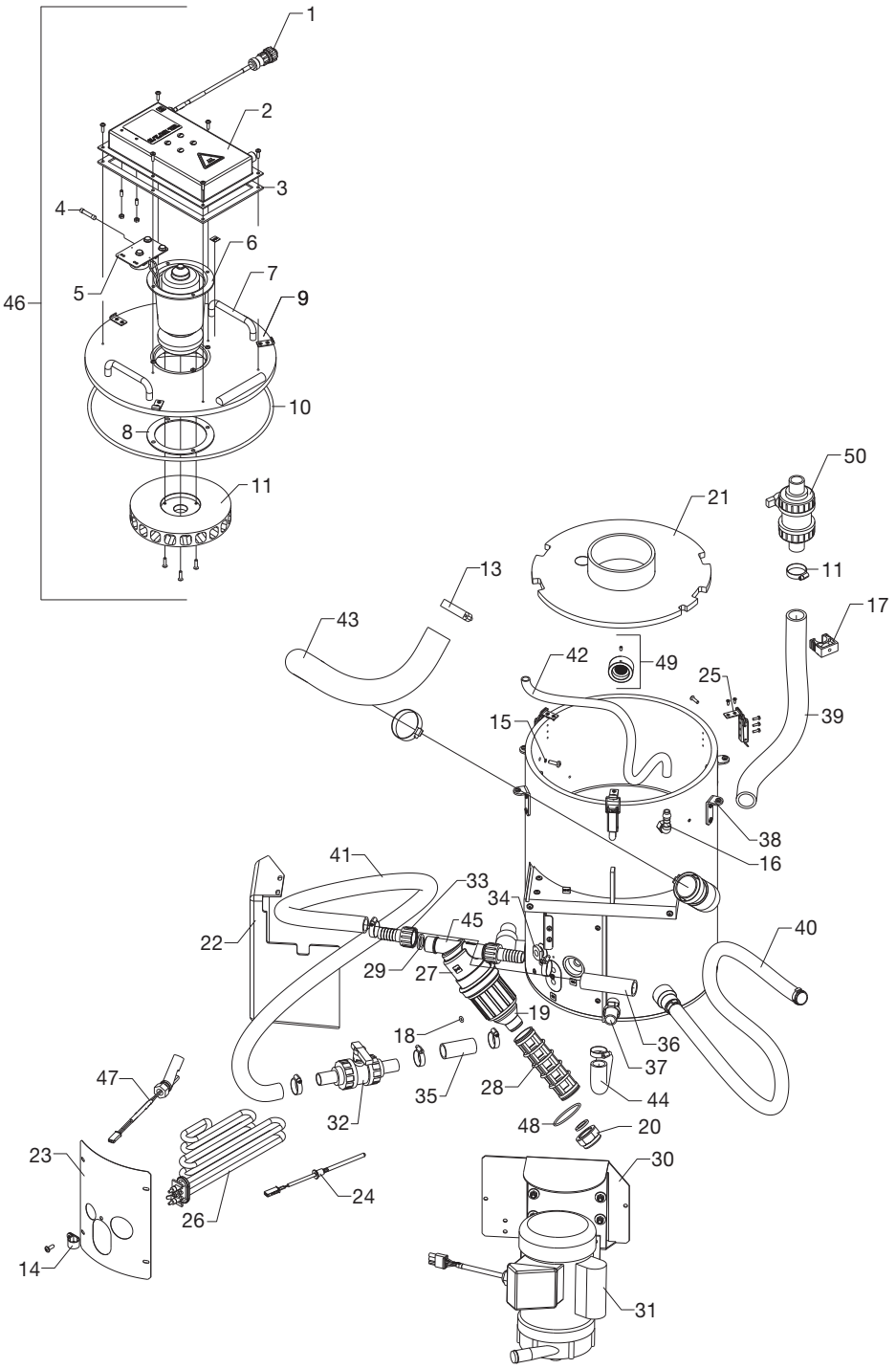
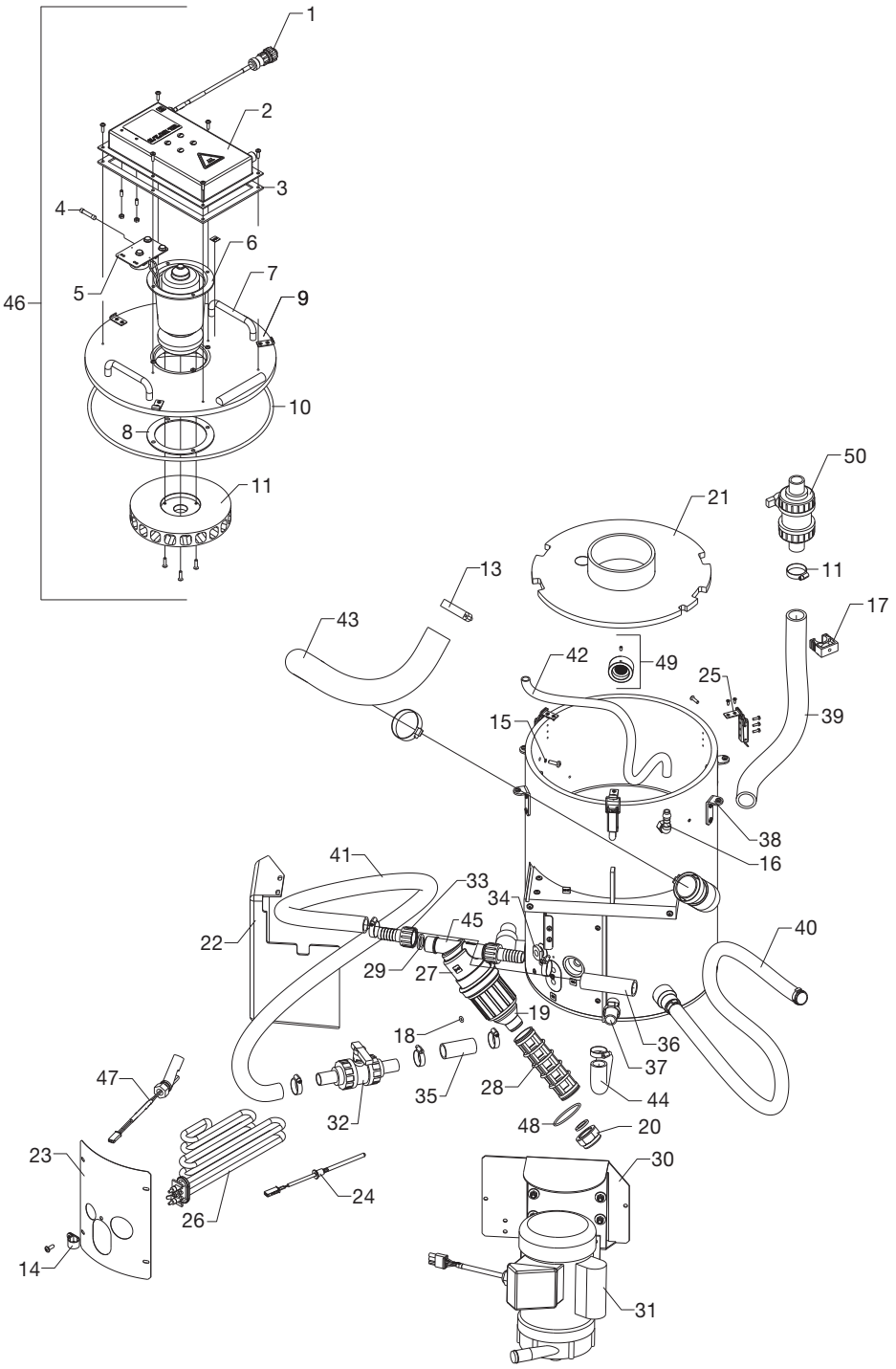


T8524

CENTRIFUGE

Centrifuge

Pos. No	68	85	Specification
1	10003827	10003827	CABLE, CENTRIFUGE, MOTOR
2	10008450	10008450	COVER, MOTOR, CENTRIFUGE
3	10003597	10003597	SEALING, COVER, CENTRIFUGE
4	16090	16090	FUSE, 6A 6,3X32 S/B UL
5	26896	26896	PCB, MOTOR, FILTER, CHOKE
6	10008448	10008448	MOTOR, SUPPORT, CENTRIFUGE
7	20213	20213	HANDLE D10X96 TP.92096-BLACK
8	10003716	10003716	SEALING, SUPPORT, MOTOR
9	10003656	10003656	COVER, TOP, HOUSING, MOTOR
10	45827	45827	O-RING, D289.3X5.70
11	10007954	10007954	ROTOR, CENTRIFUGE
12	6323	6323	CLAMP, HOSE D13-27
13	25169	25169	CLAMP, HOSE D27-51
14	25428	25428	CLAMP, CABLE 5/8"
15	25437	25437	O-RING D4X1 TP.EPDM 14463896
16	25571	25571	FIT.ELBOW, HOSE D10X3/8" RG WES
17	25847	25847	HOLDER, PIPE, D32, 1R.ST1.320
18	35355	35355	O-RING D5.0X2.5 EPDM
19	35513	35513	O-RING, VITON, 34.0 x 2.0MM
20	35929	35929	CAP 3/4"
21	42107	42107	DECK, INTERMEDIATE, CENTRIFUGE
22	42117	42117	COVER, HEATER, TANK
23	42156	42156	PLATE, PROTECTION, WASH-UNIT
24	43724	43724	SENSOR, TEMP NTC (90MM CABLE)
25	45828	45828	FASTENER, TL2055, ELFORZ
26	45876	45876	HEATER, COMPLETE,1 200W, BTC70C
27	45908	45908	FILTER, 3/4", COMPL. INCL. AMIAD, 200, MICRON
28	10024663	10024663	FILTER INSERT, ODIS, 200 MY, WITH O-RINGS
29	0059097	0059097	PACKING, D25XD17X3, VITON 75
30	10004317	10004317	BRACKET, PUMP, WASH-UNIT



T8524

CENTRIFUGE

Centrifuge

Pos. No	68	85	Specification
31	63866	63866	PUMP, FILTERUNIT, IWAKI MD70 RLZ
32	64585	64585	VALVE, BALL, D20
33	70218	70218	HOSE CLAMP 3/4"X20
34	74070	74070	FITTING, BUSHING, 3/8"RGXD6
35	74234	74234	HOSE, REINF, PVC, 3/4", L=55
36	74235	74235	HOSE, REINF, 3/4", PVC, L=90
37	74489	74489	TUBE, SUCTION, CENTRIFUGE
38	74510	74510	SUSPENSION, TANK
39	10008256	10008256	HOSE, REINFORCED, SPIRAL D25/D33
40	10011120	10011120	HOSE, REINFORCED, SPIRAL D20/D26.4
41	74626	74626	HOSE, REINF, 3/4", PVC, L=1100
42	74653	74653	HOSE, CLEAR, PVC, 10X14
43	10016608	10016608	HOSE, SIGMAFLEX, 42/40
44	10008255	10008255	HOSE, REINFORCED, SPIRAL D20/D26.4
45	10024657	10024657	FILTER, 3/4", HOUSING, COMPLETE
46	10008452	10008452	COVER, TOP, CENTRIFUGE, COMPLETE
47	88178	88178	SWITCH, LEVEL, (7037)
48	10024660	10024660	O-RING, D54X3 MM
49	10003851	10003851	FILTER, PUMP, CIRCULATION, COMPLETE
50	63098	63098	VALVE, BALL, D25
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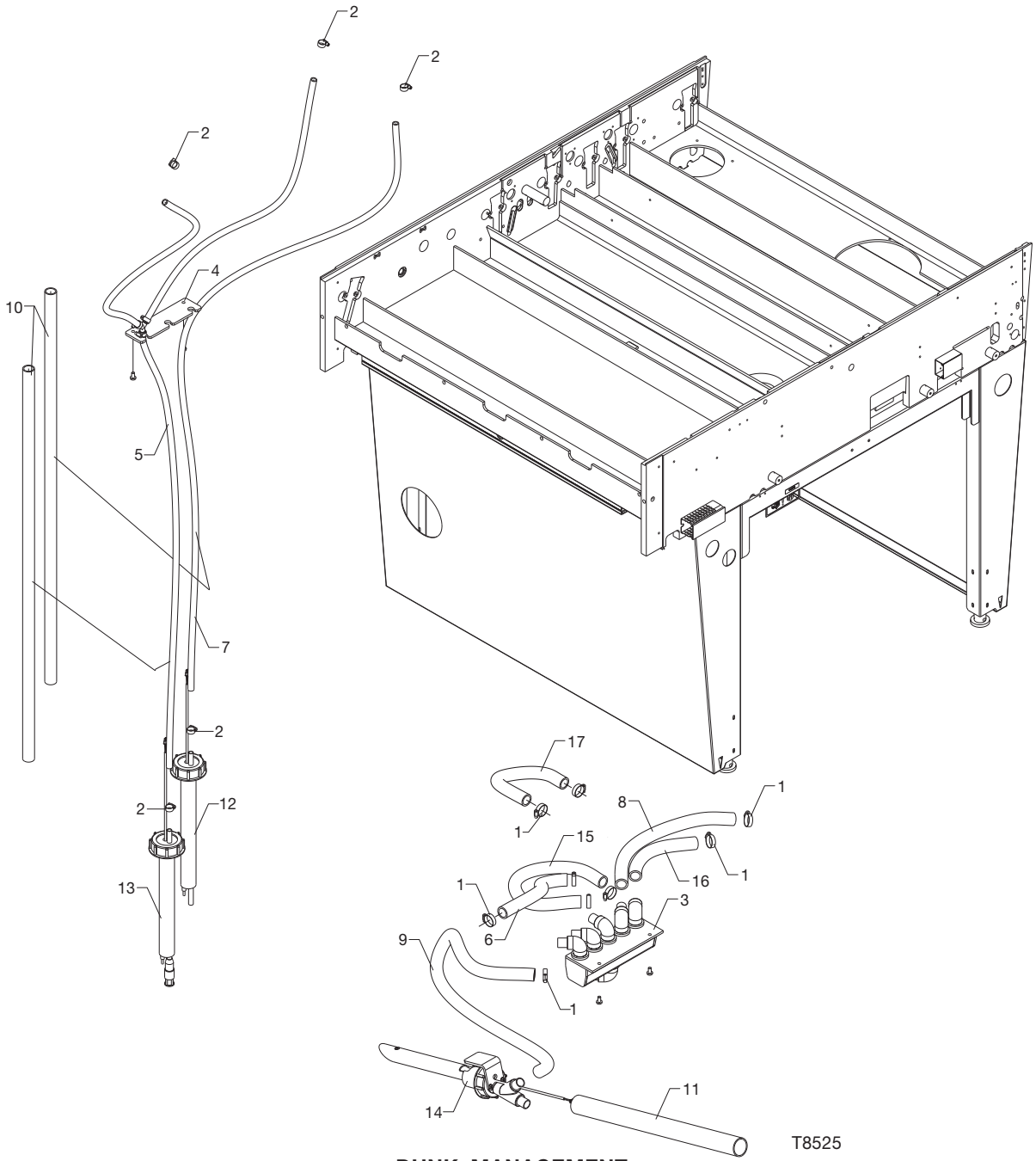

DUNK, MANAGEMENT

Dunk, management

Pos. No	68	85	Specification
1	6323	6323	CLAMP, HOSE D13-27
2	15510	15510	CLAMP, HOSE D11-18MM
3	10002876	10002876	MANIFOLD, WASTE, D20,(5->1), CPL
4	73597	73597	BRACKET, REPL, TUBE
5	73603	73603	HOSE-DEV/FINISHER-DUNK
6	10011118	10011118	HOSE, REINFORCED, SPIRAL D20/D26.4
7	74582	74582	HOSE, Y-DUNK
8	10011112	10011112	HOSE, REINFORCED, 3/4", PVC
9	10011113	10011113	HOSE, FLEXIBLE D20/23, L=750
10	74697	74697	HOSE, SPIRAL, L=1000, SPS 20
11	74698	74698	HOSE, SPIRAL, L=500, SPS 35
12	10010818	10010818	SUCTION TUBE, 2-PIN SENSOR
13	10010534	10010534	SUCTION TUBE, 2-PIN SENSOR, CONTRAVALVE
14	10004075	10004075	TUBE, WASTE, SENSOR, 2-PIN, L=282
15	10011114	10011114	HOSE, REINFORCED, SPIRAL D20/D26.4
16	10011117	10011117	HOSE, REINFORCED, 3/4", PVC
17	10011115	10011115	HOSE, REINFORCED, SPIRAL D20/D26.4
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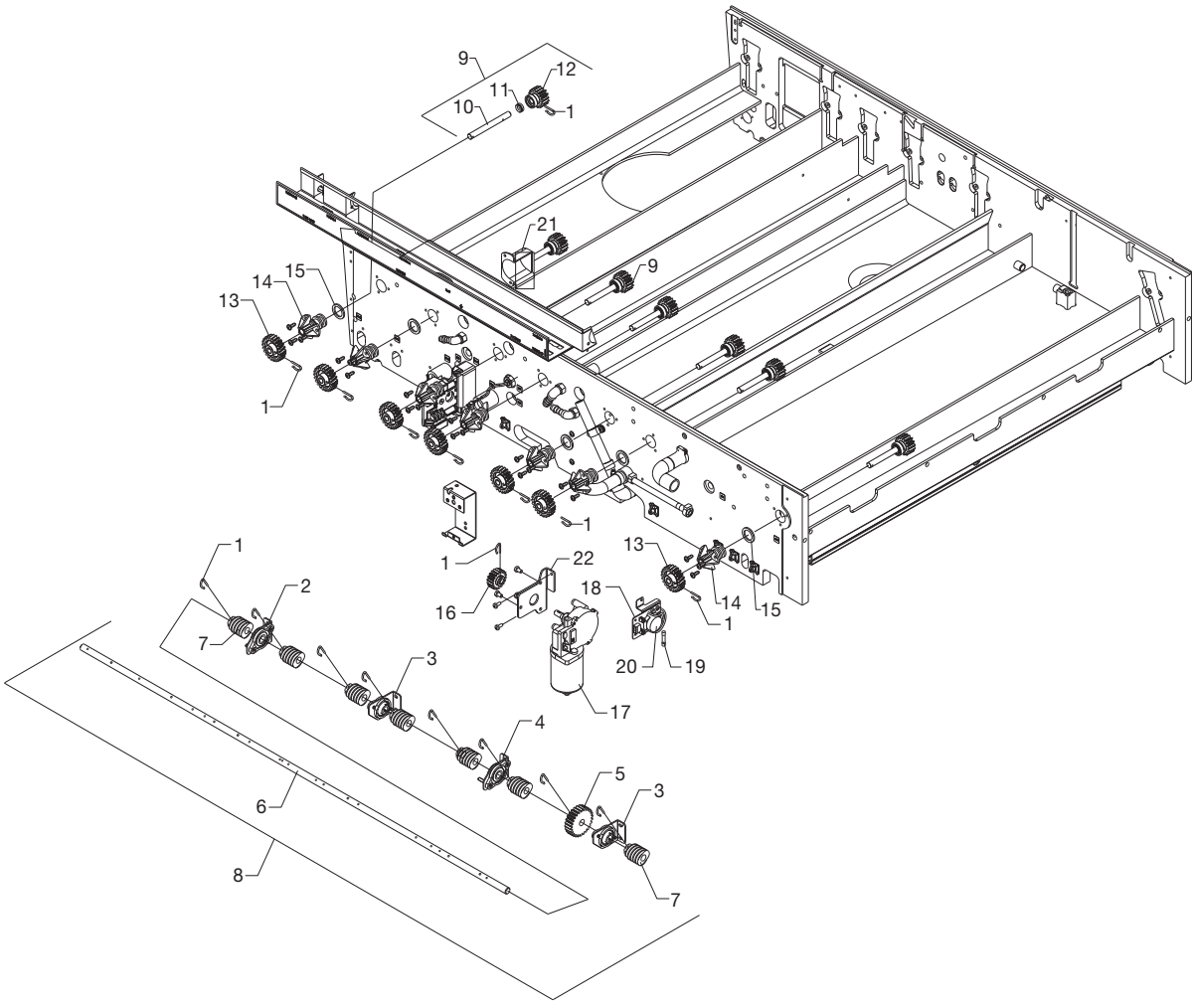

T8526

DRIVE

Drive

Pos. No	68	85	Specification
1	73241	73241	CLIPS, R-SHAPE, D2.5X20
2	98936	98936	BRACKET, BEARING
3	88102	88102	BEARING, BRACKET
4	85569	85569	BRACKET, BEARING
5	10016983	10016983	GEAR, Z26, M2, D12
6	32786	32786	SHAFT, DRIVE, MAIN
7	73250	73250	WORM, LEFT, Z2, M2, D12
8	88104	88104	DRIVE, MAIN, COMPLETE
9	98336	98336	SHAFT W. GEAR, Z16, COMPLETE
10	73242	73242	SHAFT, GEAR
11	6520	6520	GROMMET, V-SEAL
12	73240	73240	GEAR, Z16, M2
13	73209	73209	GEAR, Z22, M2, LEFT
14	10002910	10002910	BEARING, DRIVE
15	10002994	10002994	O-RING, 21X1.5, EPDM
16	73246	73246	GEAR, Z18, M2
17	73966	73966	MOTOR, DRIVE
18	36537	36537	PCB, FILTER, CHOKE, W.WIRES 6.3X0.8+4.3X0.8
19	5659	5659	FUSE 5.0A, 6.3X32, S/B
20	98170	98170	FILTER, MOTOR, COMPLETE
21	73902	73902	PROTECTION, GEAR
22	63774	63774	BRACKET, MOTOR
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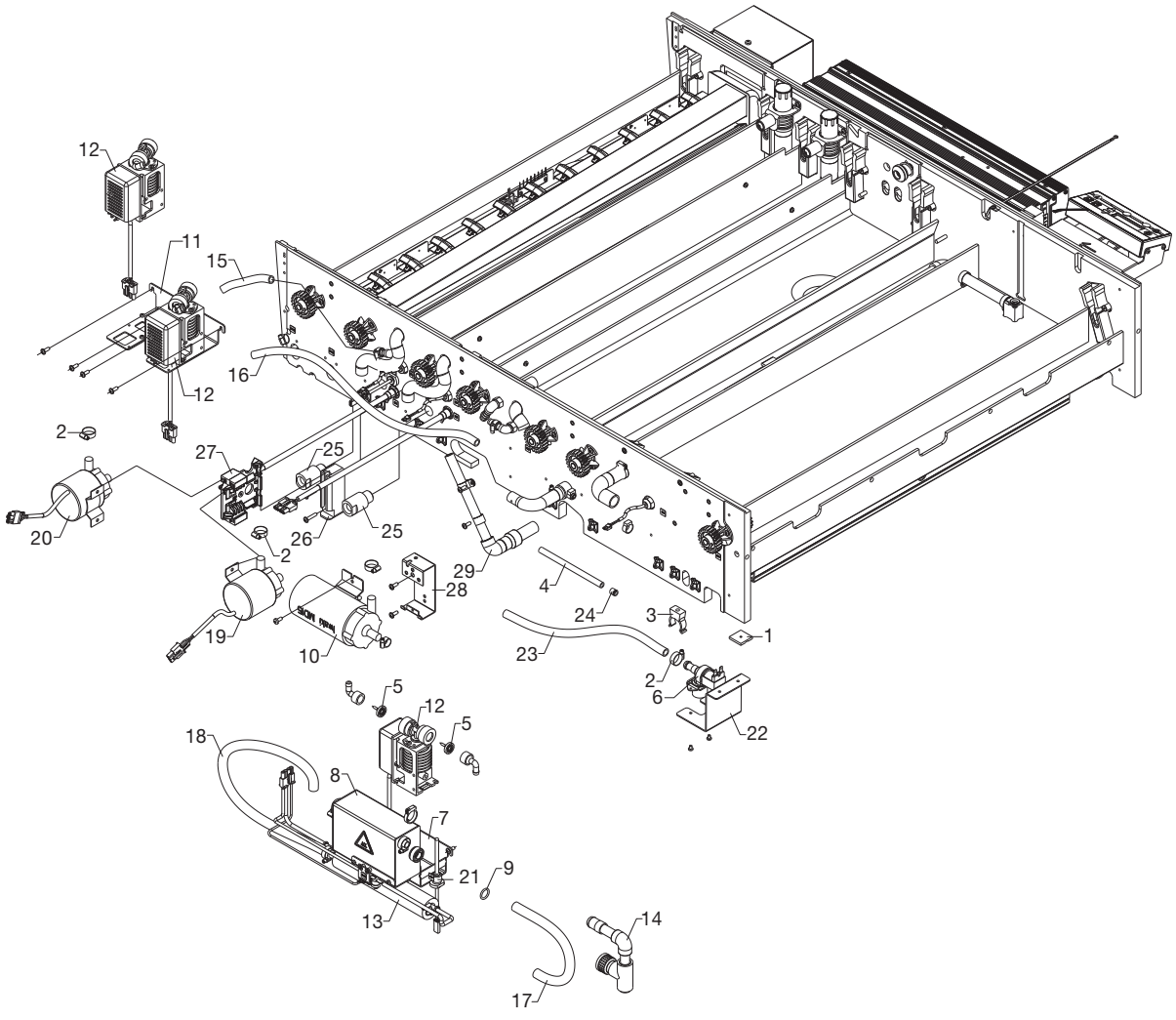

T8527

PUMP/CIRCULATION

Pump/circulation

Pos. No	68	85	Specification
1	5378	5378	HOLDER, CABLE, SELF-ADHEASIVE
2	6019	6019	CLAMP, HOSE D8-22
3	6388	6388	PIPE HOLDER D25
4	74633	74633	HOSE, REPLENISH, DEV, INLET
5	10003917	10003917	VALVE, POPPET, ASSEMBLY, PUMP, BELLOW, IWAKI
6	25700	25700	VALVE, SOLENOID ES 90/88 3.3L/MIN
7	41644	41644	BRACKET, PUMP, REPLENISH/HEATEXCHANGE
8	42180	42180	HEAT-EXCHANGER, CIRCULATON, DEV
9	45592	45592	O-RING, D15.54X2.62, EPDM
10	53348	53348	PUMP, IWAKI, MD-15R, WASH
11	73158	73158	BRACKET, PUMP, WASH
12	73305	73305	PUMP, BELLOW, W.PLUG
13	73719	73719	HEATER, REPLENISH, DEV.
14	73883	73883	FITTING, TERMOSENSOR
15	74256	74256	HOSE, D9/D13, FINISH, REPL.
16	74257	74257	HOSE, D9/D13, ADDITIV, WASH
17	74631	74631	HOSE, RUBBER, D9.5, L=265
18	74632	74632	HOSE, RUBBER, D9.5, L=524
19	85497	85497	PUMP, IWAKI, MD-10L
20	85498	85498	PUMP, IWAKI, MD-10L
21	88444	88444	SENSOR, TEMP
22	10002474	10002474	BRACKET, WATER VALVE
23	10002740	10002740	HOSE, CLEAR, PVC, D10/14
24	10003815	10003815	VALVE, CHECK TP.30401000002 (WHITE)
25	88151	88151	FITTING, CIRCULATION, PUMP
26	63946	63946	SUPPORT, PUMP, SEC3, 4
27	63932	63932	BRACKET, PUMP, SEC3, 4
28	73330	73330	BRACKET, PUMP, MD-15/MD-20
29	10002899	10002899	PIPE, SPRAYBAR, INLET
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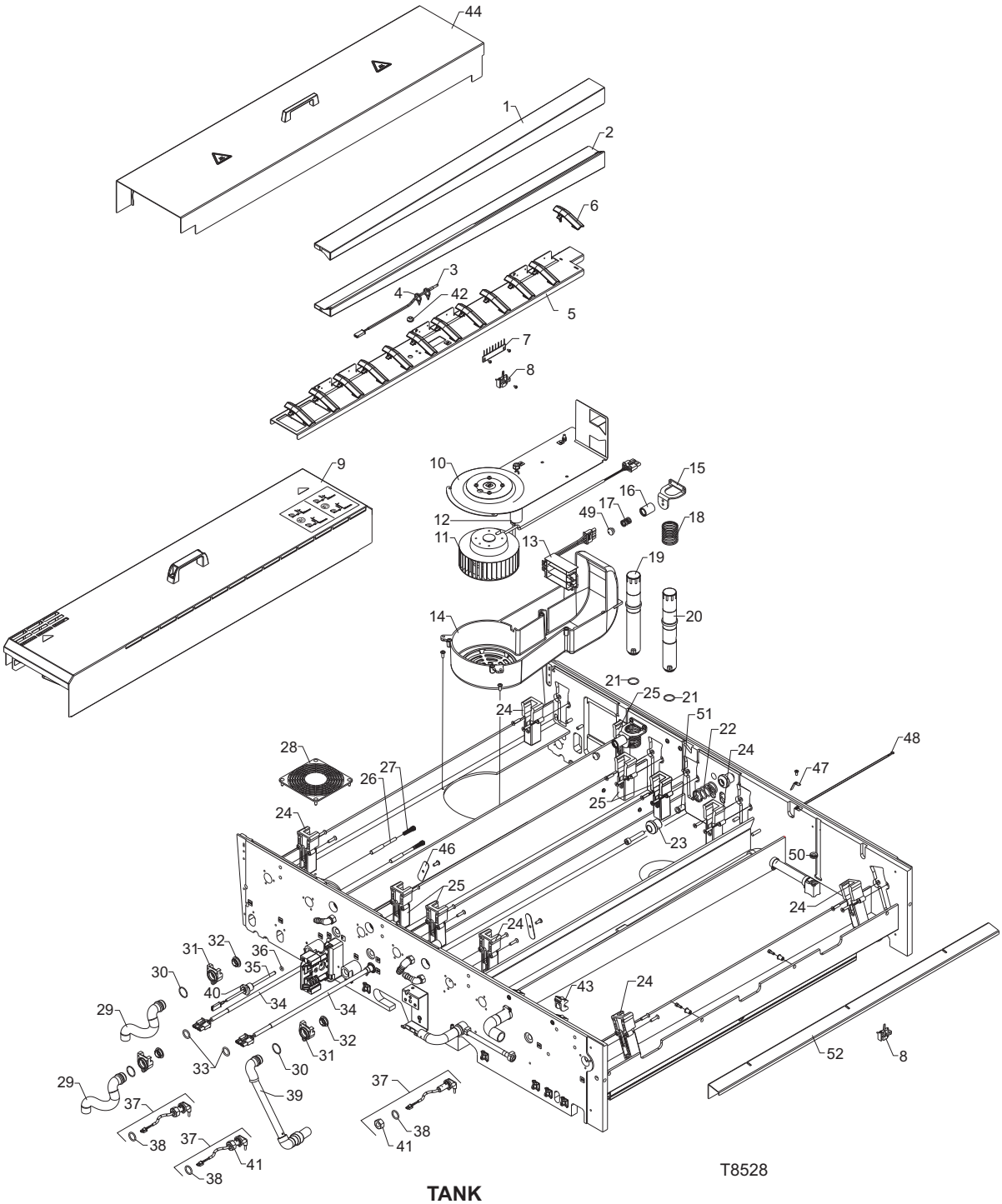
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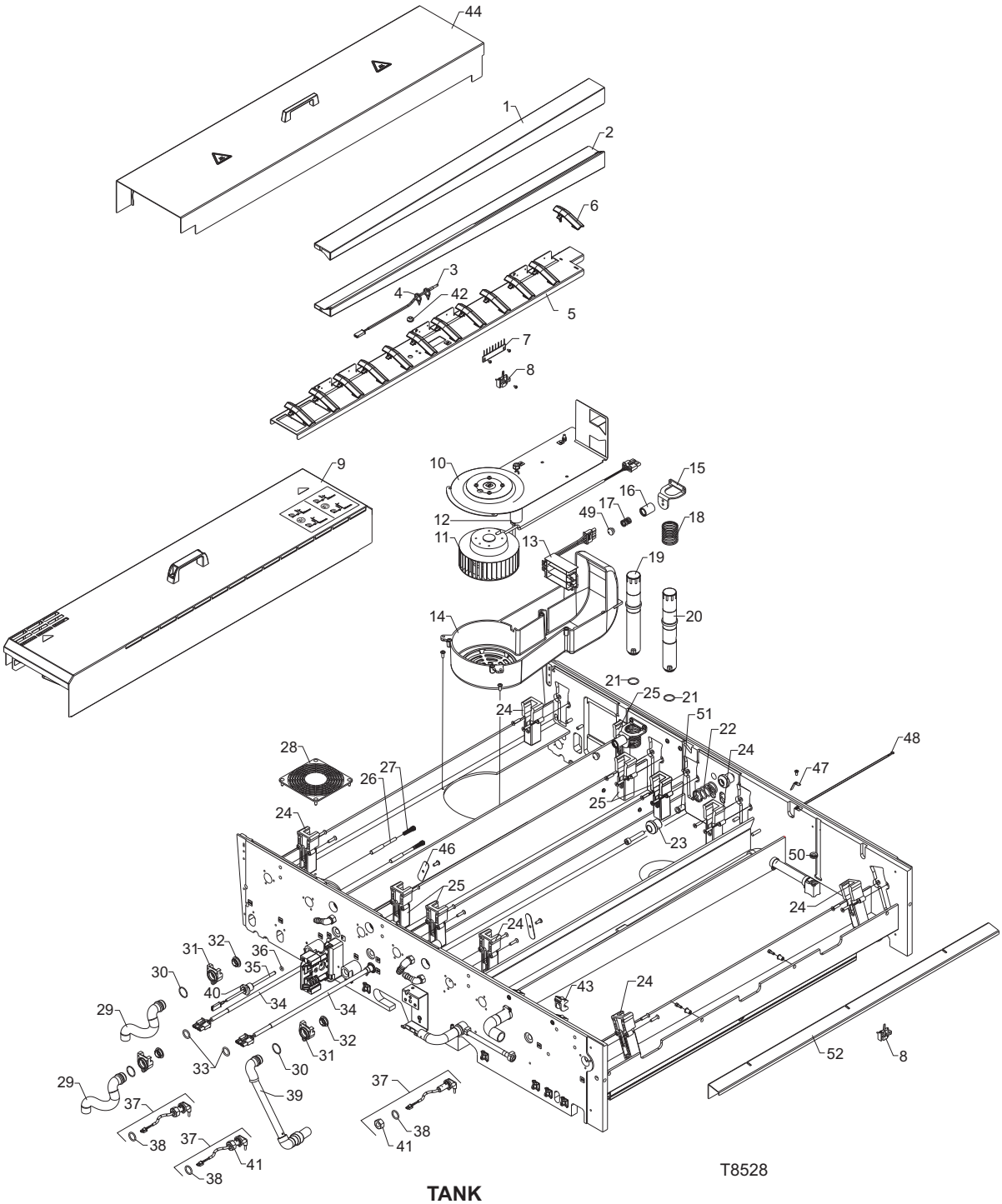
T8528

TANK

Tank

Pos. No	68	85	Specification
1	10008065	10006012	AIRDUCT, UPPER
2	10008070	10006023	AIRDUCT, LOWER
3	26385	26385	SENSOR, TEMP THERMISTOR, PLASTIC
4	5304	5304	CABLE-TIE 100X2.5 PL
5	85234	85179	GUIDE, HEATER, COMPLETE
6	32332	32332	GUIDE, DRYER
7	74500	74500	BRUSH, ANTISTATIC
8	16787	16787	SWITCH, ASSY 10-59220-010
9	10001956	10001957	COVER, RINSE-FINISHER
10	10003381	10003381	COVER, HEATER-FAN
11	73982	73982	FAN, 2TRE15 W PLUG
12	54563	54563	CAPACITOR, 2uF
13	63043	63043	HEATER 2x750W W.PLUG
14	10002845	10002845	HOUSING, FAN-HEATER
15	73016	73016	BRACKET, DRAIN, OVERFLOW
16	10009485	10009485	BUSHING, SPRING
17	74226	74226	SPRING, D12.5, T1.6, L19, K12.3
18	14458	14458	SPRING, STANDPIPE D30X25
19	98706	98706	STANDPIPE, FIN, BLUE, INCL. O-RING
20	98274	98274	STANDPIPE, RINSE, GR.WH., INCL. O-RING
21	6169	6169	O-RING D20X2
22	10013412	10013412	SPRING, D1.6X20X48, NR 6101
23	10013418	10013418	BUSHING, SPRING, SPRAYBAR, NEW
24	10011006	10011006	BEARING, ROLLER, DARK GREY, 6 KG, COMPLETE
25	10011020	10011020	BEARING, ROLLER, BLACK, 20 KG, COMPLETE
26	74399	74399	PIN, CYLINDRE, D8/D6 FOR SPRING
27	8372	8372	SPRING, CONICAL
28	0151083	0151083	GRID, FAN INCL.TAP
29	32796	32796	TUBE, CIRCULATION
30	25344	25344	O-RING D22.1X1.6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T8528

TANK

Tank

Pos. No	68	85	Specification
31	73193	73193	BUSHING, SUPPORT, TUBE
32	73195	73195	BUSHING, TUBE
33	8181X000700	8181X000700	O-RING, 15.88 X 2.62
34	88445	88445	HEATER, 1000W, INCL. O-RING
35	88444	88444	SENSOR, TEMP, INCL. O-RING
36	35355	35355	O-RING D5.0X2.5 EPDM
37	87520	87520	SENSOR, LEVEL, 90, DEGREE, COMPLETE
38	35386	35386	O-RING D16.3X2.4 FPM
39	10040196	10040196	TUBE, CIRC, COMPLETE
40	74070	74070	FITTING, BUSHING, 3/8"RGXD6
41	10037727	10037727	NUT M12 HE 4
42	6295	6295	GROMMET D6/9X1.5
43	12458	12458	BEARING, WORM, SHAFT D10.2X36X22
44	86083	86082	COVER, DRYER, COMPLETE
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46	74462	74462	COVER, REPL, WASH, FINISH, RINSE
47	74436	74436	SPRING, GROUNDING, TRAY, DEV
48	74495	74495	CABLE, GROUNDING
49	10003357	10003357	SPRING, SILICONE, SPRAY
50	10016917	10016917	GROMMET, V-SEAL VA-0012RUB
51	74480	74480	BUSHING, SLIDE, SPRAY
52	10006932	10007610	BRACKET, SENSOR, INPUT
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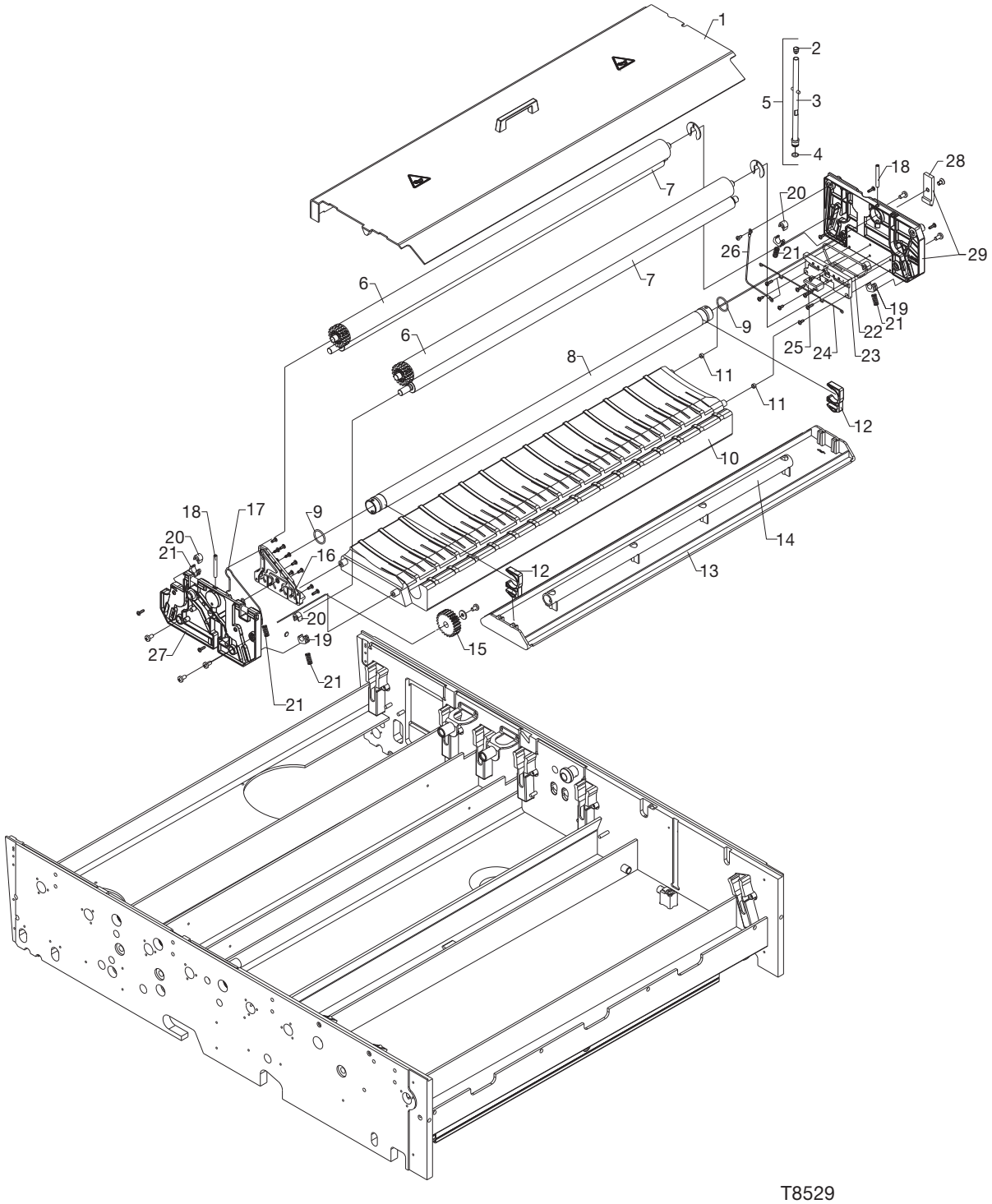
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T8529

DEV SECTION

Dev section

Pos. No	68	85	Specification
1	10013764	10013818	LID, TRAY, DEV
2	45922	45922	STOPPER, D10/D7-D6, 085-0100-699-03
3	10002862	10002862	DRAIN, LEVEL, ELECTROPOLISHED
4	1360	1360	O-RING 10.1X1.6
5	10002861	10002861	TUBE, DRAIN, LEVEL, COMPLETE
6	85247	98713	ROLLER, SH20, STR., 850, BUSHING, INCL. GEAR
7	10002834	10002336	ROLLER, STEEL, D25
8	73757	73606	SHAFT, RACK, DEV
9	25006	25006	O-RING D25.3X2.4
10	10002050	10002051	GUIDE, DEV
11	74565	74565	BUSHING, GUIDE, DEV
12	10005529	10005529	SPRING, GUIDE
13	10007636	10007926	LID, DEV, INCL. TUBE
14	10007635	10007635	TUBE, SUPPORT, LID
15	73403	73403	GEAR, Z24, M2, B15
16	10003336	10003336	MANIFOLD, RACK, DEV, LEFT
17	10013001	10013001	O-RING, D2
18	15327	15327	SCR M6X50 HE SO CP4
19	10005530	10005530	BEARING, VESSEL
20	10005533	10005533	BEARING, ROLLER, RACK
21	74445	74445	SPRING, 20MM, R=15.97N/MM
22	10012854	10012854	O-RING, D3, L237
23	10003337	10003337	MANIFOLD, RACK, DEV, RIGHT
24	74468	74468	SPRING, GROUND, ROLLER, STEEL
25	10012988	10012988	BLOCK, SUCTION, MANIFOLD
26	85505	85505	WIRE, GROUND, ROLLER, DEV
27	10012431	10012431	RACK, SIDE, DEV, LEFT
28	10016987	10016987	STOP BLOCK, DEV RACK
29	10017181	10017181	RACK, SIDE DEV, RIGHT, W. STOP BLOCK
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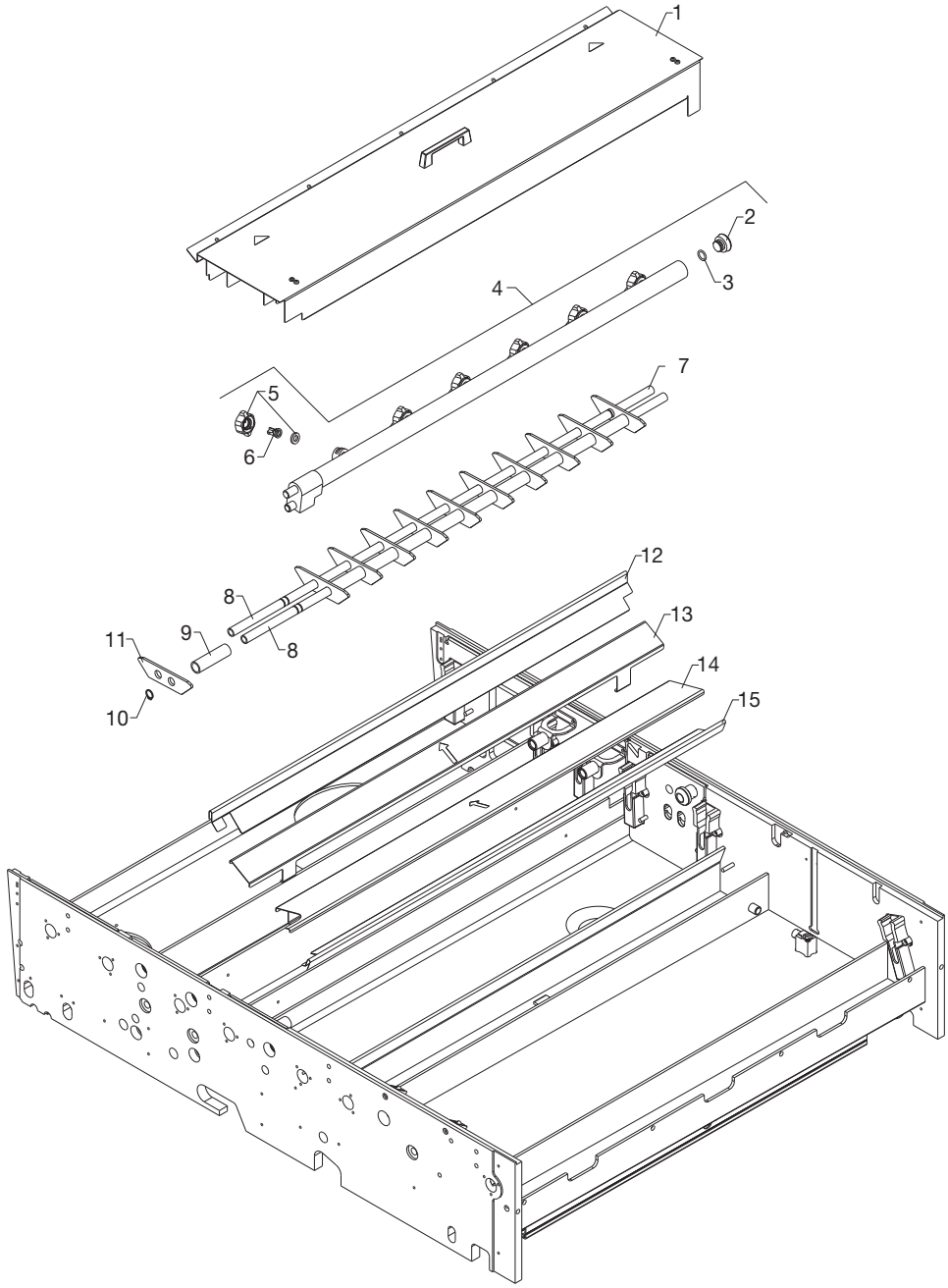

T8530

WASH SECTION

Wash section

Pos. No	68	85	Specification
1	10006207	10005997	COVER, WASH
2	10003754	10003754	PLUG, SPRAYBAR
3	35434	35434	O-RING 13.3X2.4 EPDM
4	10003960	10003707	SPRAYBAR, COMPLETE
5	10005027	10005027	RETAINER, BAYONET, CAP, INCL. GASKET
6	10003689	10003689	NOZZLE, TONGUE-TYPE, 684.568.56
7	85245	98547	GUIDE, WASH, COMPLETE
8	73745	73039	GUIDE, SHAFT
9	64699	64699	BUSHING D20X2,3X70
10	35598	35598	CIRCLIP, D14, A2, DIN 471
11	74329	74329	SECTION, GUIDE, WASH
12	73990	73932	SPRINGSEAL, WASH, OUT
13	42219	42204	SPLASHGUIDE, WASH, INNER, REAR
14	42218	42203	SPLASHGUIDE, WASH, INNER, FRONT
15	10002852	10002851	SPRINGSEAL, WASH, IN
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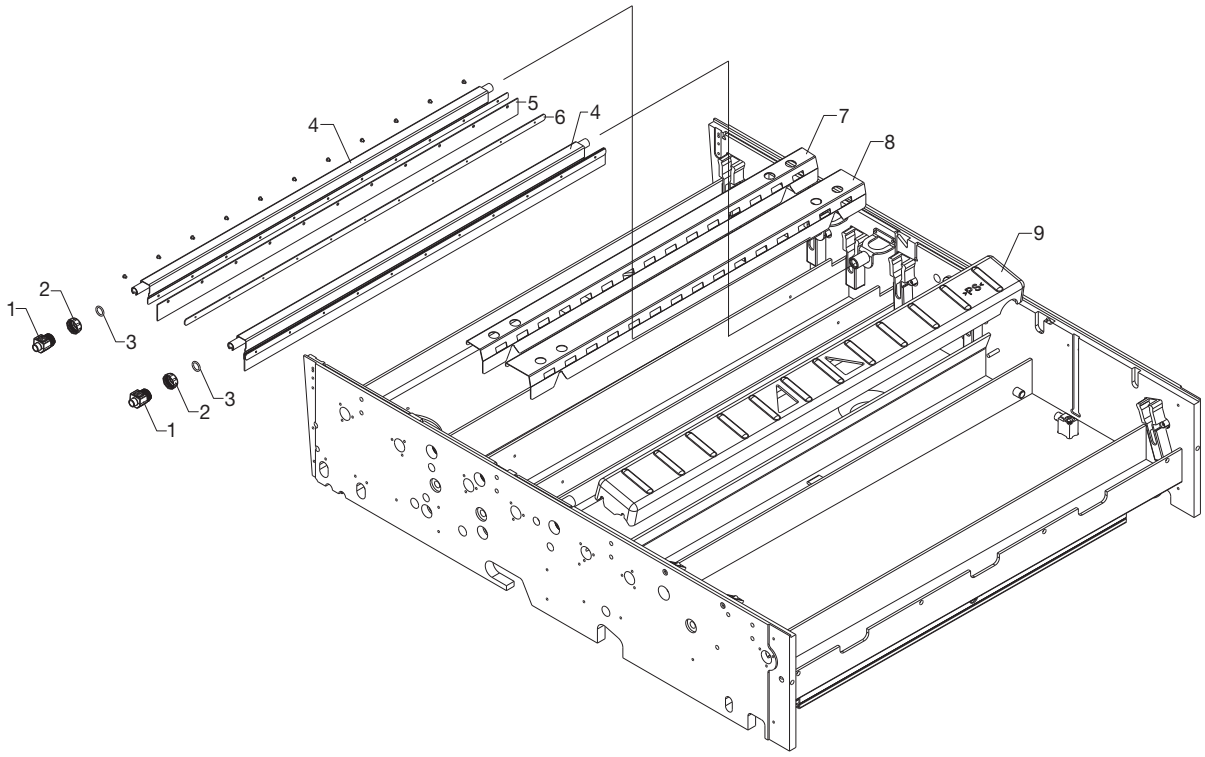

T8531

GUIDES AND SPRAY TUBES

Guides and spray tubes

Pos. No	68	85	Specification
1	10006670	10006670	VALVE, TUBE, SPRAY
2	10006668	10006668	NUT, M22 MOULDED
3	35434	35434	O-RING 13.3X2.4 EPDM
4	85239	88482	TUBE, SPRAY, SINGLE ROW, SCRABER, COMPLETE
5	73743	73022	PLATE, FINISHER
6	73744	73023	BAR, SCRABER, FINISHER
7	10005976	10005974	GUIDE, FIN 2
8	10005975	10005973	GUIDE, RINSE
9	42132	32906	GUIDE, EXIT, DEV
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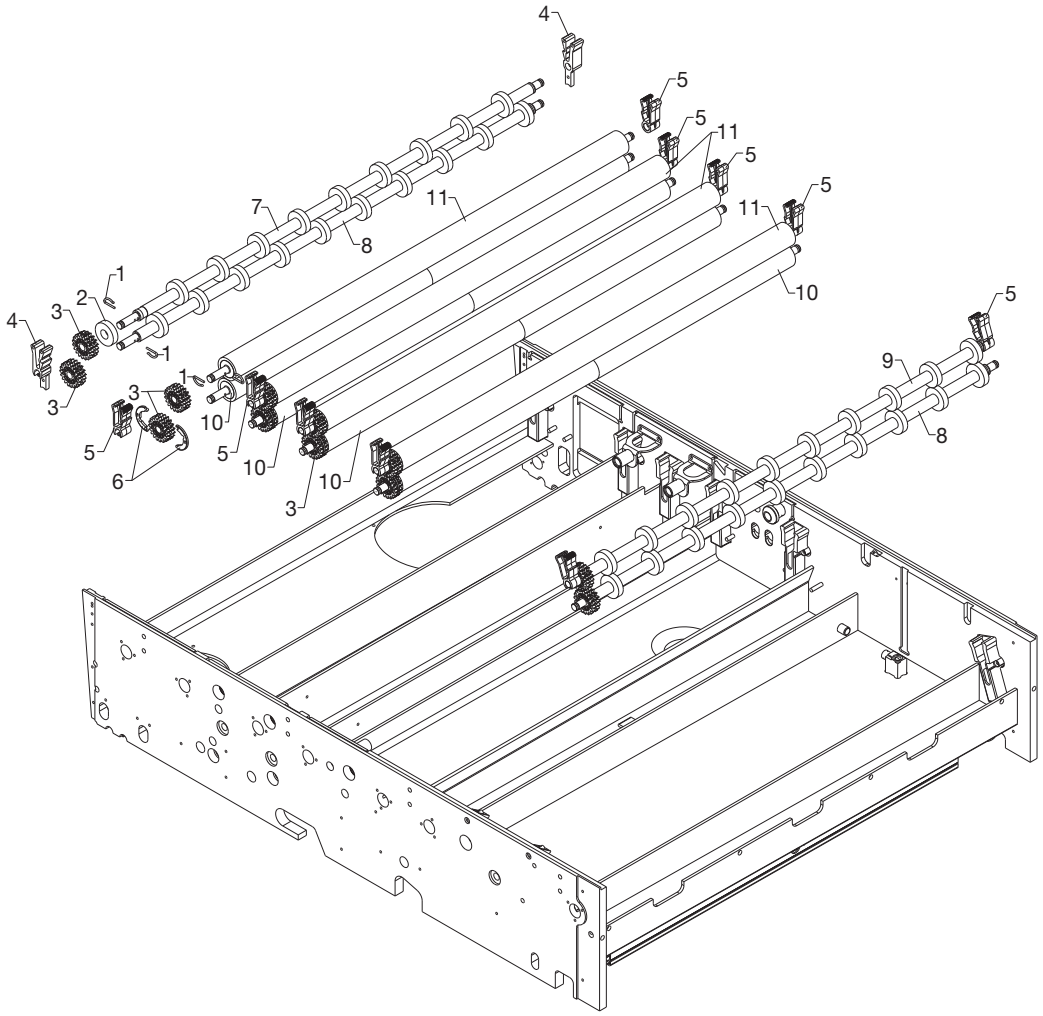

T8532

ROLLERS

Rollers

Pos. No	68	85	Specification
1	73241	73241	CLIPS, R-SHAPE, D2.5X20
2	10002826	10002826	WHEEL, RUBBER, D40/D16X10
3	73262	73262	GEAR, Z19, M2, D12
4	10013520	10013520	BEARING, ROLLER, SNAP
5	43600	43600	BEARING, ROLLER, SNAP, BLACK
6	74038	74038	GUIDE, PLATE, GEAR
7	10003014	10003011	GUIDE, ROLLER, D40, COMPLETE
8	10003013	10003010	GUIDE, ROLLER, D40, COMPLETE
9	10003012	10002925	ROLLER, D40, COMPLETE
10	88960	88959	ROLLER, SH40, BULGED, COMPLETE
11	88958	98233	ROLLER, SH30, STR., BUSHING, COMPLETE
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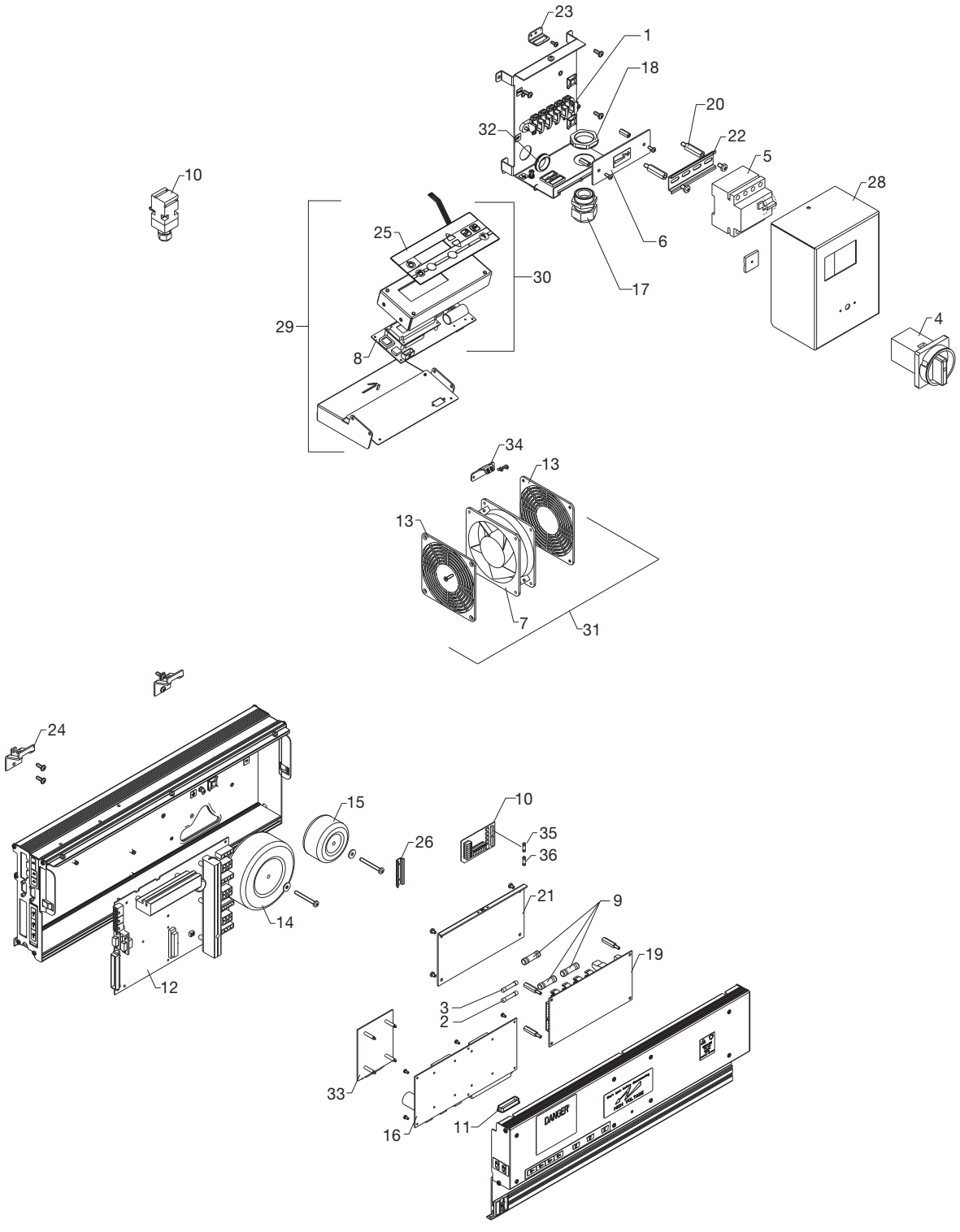
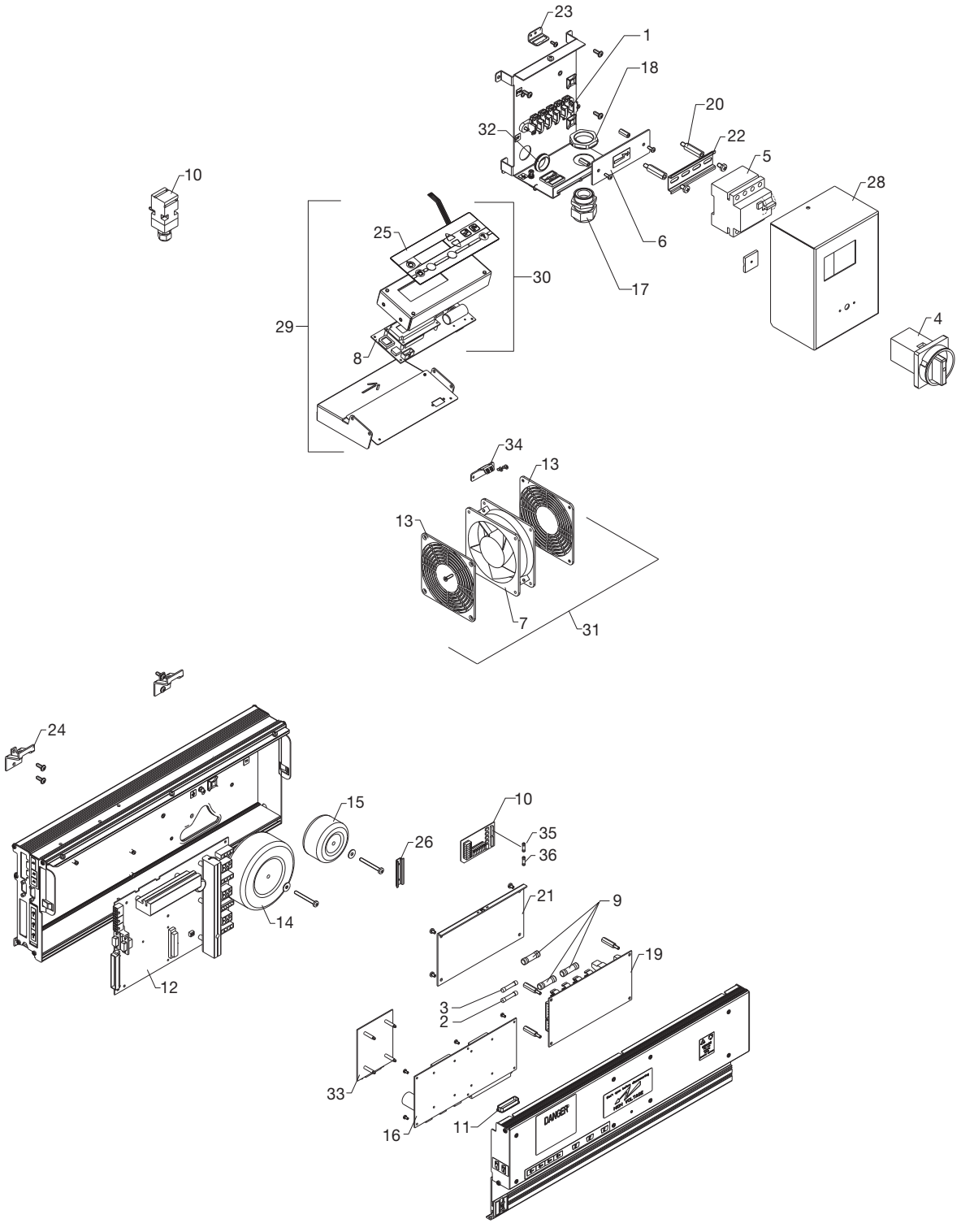


T8533

ELECTRONICS BOX

Electronics box

Pos. No	68	85	Specification
Not ill.	10017976	10017976	CD W.SOFTWARE **(Please also see page 5.1)**
	13111X0008003111X000800		TERMINAL STRIP
2	6896	6896	FUSE 4A, 6.3X32 MM
3	6716	6716	FUSE 2A, 6.3X32 MM, S/B
4	16414	16414	SWITCH, L2-16, 66.5X66.5
5	10030625	10030625	RELAY, GFCI 40A/30mA 400V 4-POL
	64121Z0002014121Z000201		PLASTIC SHIELD
7	26054	26054	FAN, SUNON DP200A 2123XBT
8	10025327	10025327	PCB, MMU **(NOTE: Without software - see page 5.1)**
9	26508	26508	FUSE 15A SC15
10	26602	26602	SWITCH, INTERLOCK, SCHMERSAL
11	26724	26724	COVER, SUB-D 25P CONNECTOR
12	10035096	10035096	PCB, HPU-V **(NOTE: Without software - see page 5.1)**
13	0151083	0151083	GRID, FAN INCL.TAP
14	36311	36311	TRAFO, RTD300-230
15	36312	36312	TRAFO, RTD060-224
16	10031624	10031624	PCB, MPU **(NOTE: Without software - see page 5.1)**
17	36500	36500	GLAND, CABLE, ST-M 32X1.5
18	36501	36501	LOCKNUT FOR CABLE GLAND M32X1,5
19	36563	36563	PCB, FUSE, F. SINGLE HPU, W. VARISTOR
20	45512	45512	SPACER, M6X35+10, TP.DI659
21	53794	53794	COVER, PANEL, FUSE
22	54303	54303	BRACKET, RELAY, L=100
23	54394	54394	BRACKET, CONNECTOR, 3P
24	64979	64979	BRACKET, CABINET, EL
25	73355	73355	KEYBOARD, FOIL
26	74627	74627	RAIL, DIN 15,50MM F. GNUC BOX
27	10030889	10030889	PCB, FILTER, 2xTRANSFORMER, 4A-PTC-RESISTOR
28	86075	86075	BOX, GFCI/SWITCH-MAIN
29	88128	88128	MMI, COMPLETE
30	88129	88129	MMI, CONTROLBOX, COMPLETE



T8533

ELECTRONICS BOX

Electronics box

Pos. No	68	85	Specification	
31	10002644	10002644	FAN, ELBOX, COMPLETE	
32	0180216	0180216	RUBBER NIPPEL RM 10419	
33	10001713	10001713	PIM, MK2	*ONLINE PROCESSORS ONLY*
34	10002099	10002099	BRACKET, FAN	
35	10040265	10040265	FUSE, 5x20 mm, 0.63 AT (F17)	
36	10011111	10011111	FUSE, 5x20 mm, 3.15 AT (F18)	
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Appendix A: Additional spareparts

Some of the spareparts shown on the ISO-metric drawings in chapter 5 have no sparepart number and specification. The sparepart numbers and specification for those parts are listed below. The page and position numbers refer to the page and position numbers used in chapter 5.
Please also refer to the ISO-metric drawings in chapter 5.

When ordering spareparts please state carefully the sparepart number, the specification and the number of items wanted before you send your order.

Pos.No	68	85	Specification
Page 5/3 (PANELS):			
4	70296	70296	FENDER, RIGHT
5	70297	70297	FENDER, LEFT
12	10012803	10011567	COVER, DRYER
13	70302	70295	PANEL, TOP, HINGED
Page 5/5 (STAND):			
6	70327	70327	RAIL, STAND
7	10001308	86136	PANEL, FRONT, STAND
8	10001311	86140	PANEL, REAR, STAND
Page 5/7 (CLOSED STAND):			
2	10001344	10001344	PANEL, SIDE, RIGHT, STAND
3	10001345	10001345	PANEL, SIDE, LEFT, STAND
Page 5/9 (TABLE, EXIT):			
4	60881	60881	SUPPORT, TABLE, EXIT
5	10002429	10002429	BRACKET, TABLE, EXIT
6	10005918	10002432	TABLE, EXIT
7	10005921	10002433	EXTENSION, TABLE, EXIT

continues...

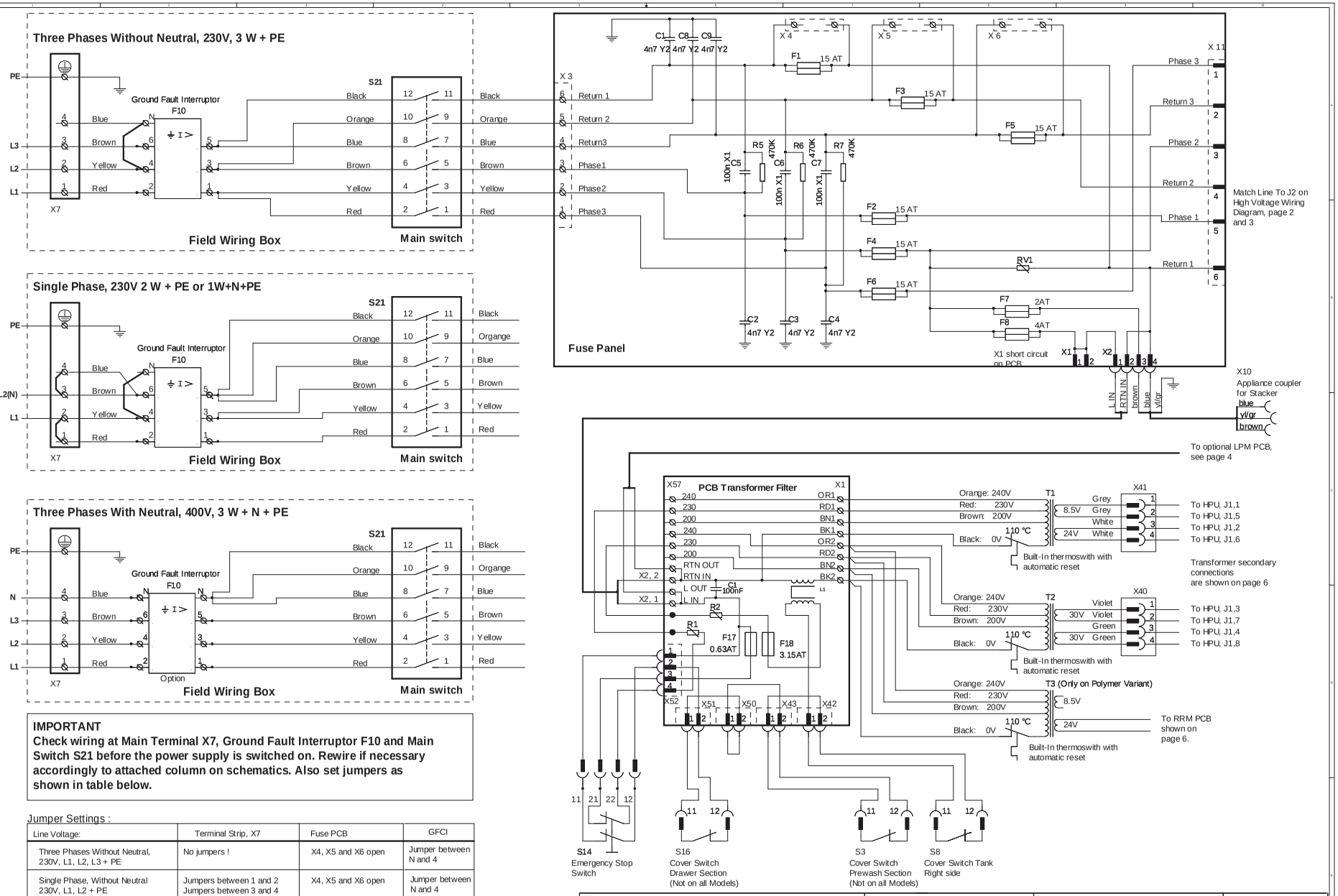
Pos.No	68	85	Specification
Page 5/11 (TABLE, FEED):			
3	10009059	10009048	TABLE, FEED
4	10008308	70298	PANEL, FRONT
5	10009056	10009042	SUPPORT, TABLE, FEED

Appendix B: Electrical diagrams

This chapter includes all electrical diagrams for the processor.

The diagrams (6 pages) cover:	
Page 1 of 6:	• Main Power Distribution, Fuse panel and Interlocks
Page 2 of 6:	• High Voltage Wiring I, 230V AC, Control Devices, HPU
Page 3 of 6:	• High Voltage Wiring II, 230 VAC Components
Page 4 of 6:	• High Voltage Wiring III, 230 VAC, Control Devices, LPM
Page 5 of 6:	• Low Voltage Wiring, Sensors and Control Devices
Page 6 of 6:	• Motors and Internal Bus Wiring, 8, 24 and 35 VAC Distribution

Main Power Distribution, Fuse panel and Interlocks


Three Phases Without Neutral, 230V, 3 W + PE
PE
L3
L2
L1
X7
Ground Fault Interruptor
F10
Blue
Brown
Yellow
Red
S21
Black
Orange
Blue
Brown
Yellow
Red
Field Wiring Box
Main switch
Single Phase, 230V 2 W + PE or 1W+N+PE
L2(N)
Organge
Three Phases With Neutral, 400V, 3 W + N + PE
N
Option
IMPORTANT
Check wiring at Main Terminal X7, Ground Fault Interruptor F10 and Main Switch S21 before the power supply is switched on. Rewire if necessary accordingly to attached column on schematics. Also set jumpers as shown in table below.
Jumper Settings :
Line Voltage:
Terminal Strip, X7
Fuse PCB
GFCI
Three Phases Without Neutral, 230V, L1, L2, L3 + PE
No jumpers !
X4, X5 and X6 open
Jumper between N and 4
Single Phase, Without Neutral 230V, L1, L2 + PE
Jumpers between 1 and 2
Jumpers between 3 and 4
Single Phase, With Neutral 230V, L1, N + PE
X4, X5 and X6 closed
Three Phases With Neutral, 400V, L1, L2, L3, N + PE
Fuse Panel
C1 C8 C9
4n7 Y2 4n7 Y2 4n7 Y2
F1 15 AT
F3 15 AT
F5 15 AT
F2 15 AT
F4 15 AT
F6 15 AT
F7 2AT
F8 4AT
R5 470K
R6 470K
R7 470K
100n X1
C5
C6
C7
C2 4n7 Y2
C3 4n7 Y2
C4 4n7 Y2
RV1
X1 short circuit on PCB
X3
X4
X5
X6
X11
Return 1
Return 2
Return3
Phase1
Phase2
Phase3
Phase 3
Return 3
Phase 2
Return 2
Phase 1
Return 1
Match Line To J2 on High Voltage Wiring Diagram, page 2 and 3
X10
Appliance coupler for Stacker
blue
yl/gr
brown
L IN
RTN IN
To optional LPM PCB, see page 4
PCB Transformer Filter
X57
X1
240
230
200
RTN OUT
RTN IN
L OUT
L IN
OR1
RD1
BN1
BK1
OR2
RD2
BN2
BK2
C1 100nF
L1
R2
R1
F17 0.63AT
F18 3.15AT
X2, 2
X2, 1
X52
X51
X50
X43
X42
T1
T2
T3 (Only on Polymer Variant)
Orange: 240V
Red: 230V
Brown: 200V
Black: 0V
110 °C
Built-In thermoswith with automatic reset
8.5V
24V
Grey
White
Violet
Green
30V
X41
X40
To HPU, J1,1
To HPU, J1,5
To HPU, J1,2
To HPU, J1,6
To HPU, J1,3
To HPU, J1,7
To HPU, J1,4
To HPU, J1,8
Transformer secondary connections are shown on page 6
To RRM PCB shown on page 6.
S14
Emergency Stop Switch
S16
Cover Switch Drawer Section (Not on all Models)
S3
Cover Switch Prewash Section (Not on all Models)
S8
Cover Switch Tank Right side
Title:
Main Power Distribution
Function:
Fuse Panel And Interlocks
Date: Monday, January 14, 2008
Constructor: JW
Approval:
Page: 1 Of: 6
GLUNZ & JENSEN
ELECTRONIC AND MECHANICAL ENGINEERING
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Number: 63664
Rev.: M
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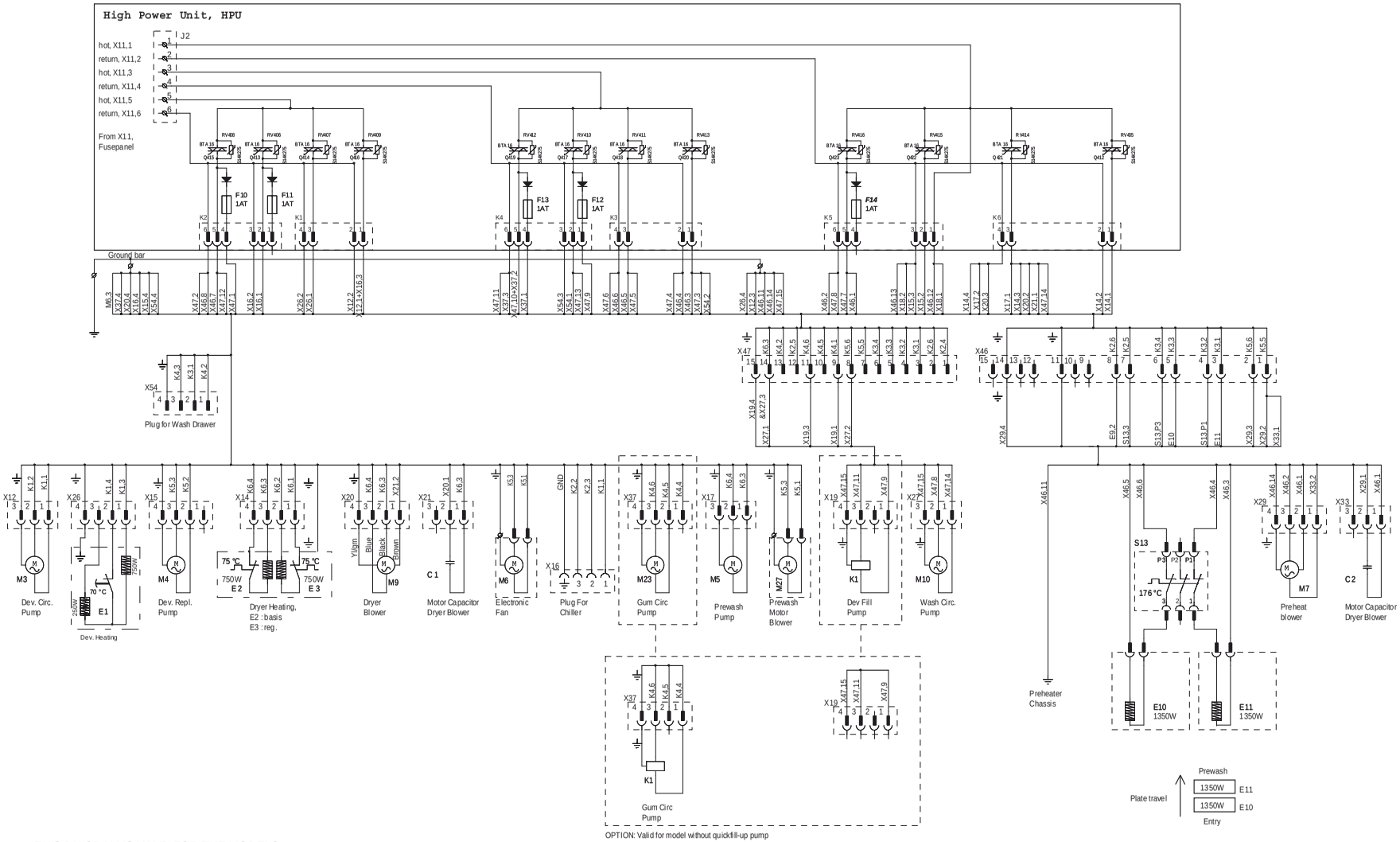
High Voltage Wiring I, 230V AC, Control Devices, HPU



THIS DIAGRAM IS VALID FOR THE MODELS MENTIONED IN THE TABLE BELOW

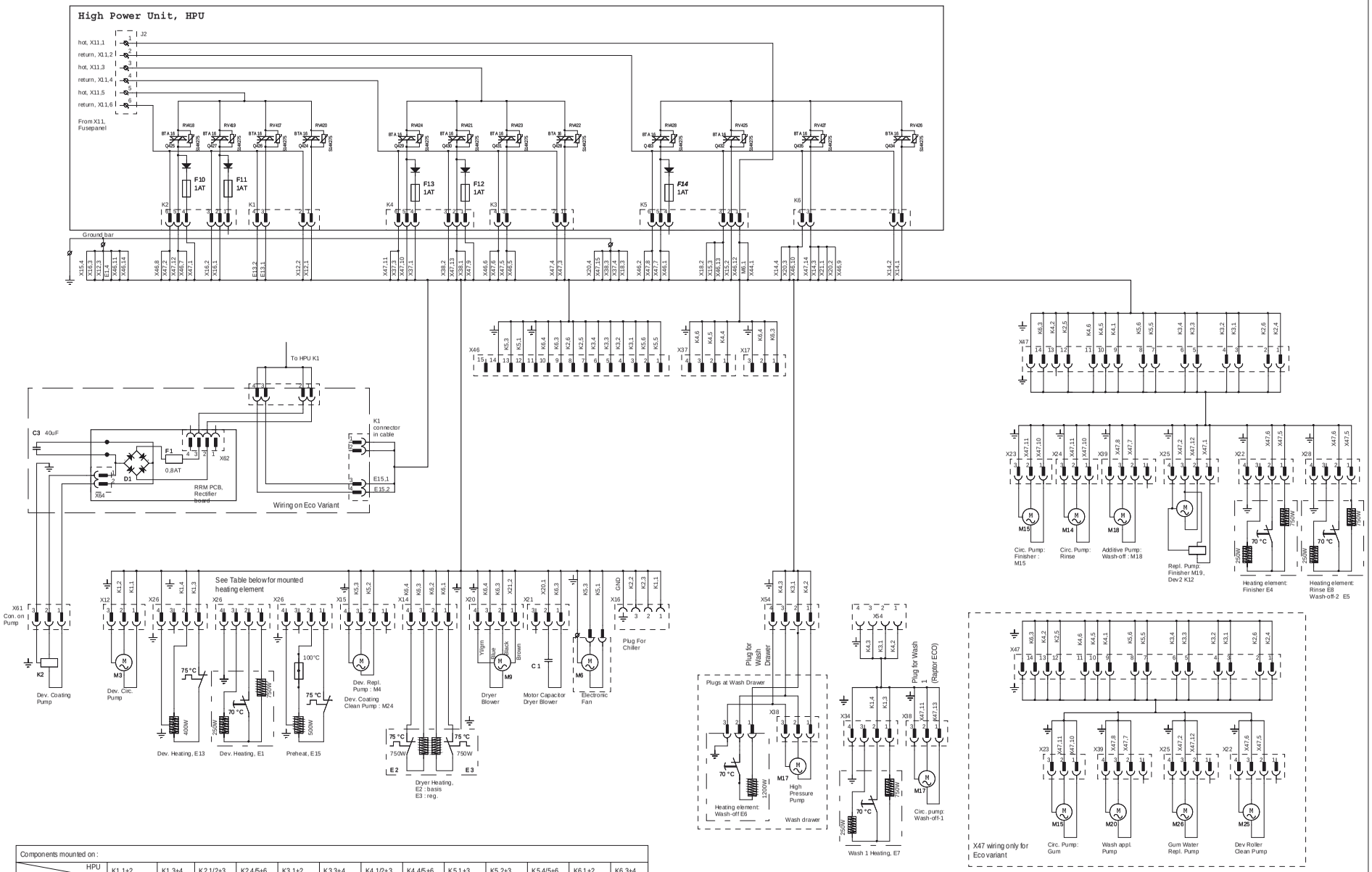
Power components mounted on :

Variant / HPU	K1,1+2	K1,3+4	K2,1/2+3	K2,4/5+6	K3,1+2	K3,3+4	K4,1/2+3	K4,4/5+6	K5,1+3	K5,2+3	K5,4/5+6	K6,1+2	K6,3+4
Thermal, Standard	M3	E1	Chiller	None	None	None	K1	M23	M6	M4	None	E3	M9+10 +E2
Polymer, with prewash and/or preheat	M3	E1	Chiller	E9	E11	E10	K1	M23	M6	M4	M7	E3	M5+9+10 +E2
Polymer, with prewash, without quickfill-up pump and/or preheat	M3	E1	Chiller	E9	E11	E10	None	K1	M6	M4	M7	E3	M5+9+10 +E2

SPECIAL MODEL

Title: High Voltage wiring I	Date: Monday, January 14, 2008	GLUNZ & JENSEN ELECTRONIC AND MECHANICAL ENGINEERING	Number: 63664 Rev.: M
Function: 230 VAC Control Devices, HPU	Constructor: TGJ		Doc. No.:
	Approval:		
	Page: 2 Of: 6		OrCAD

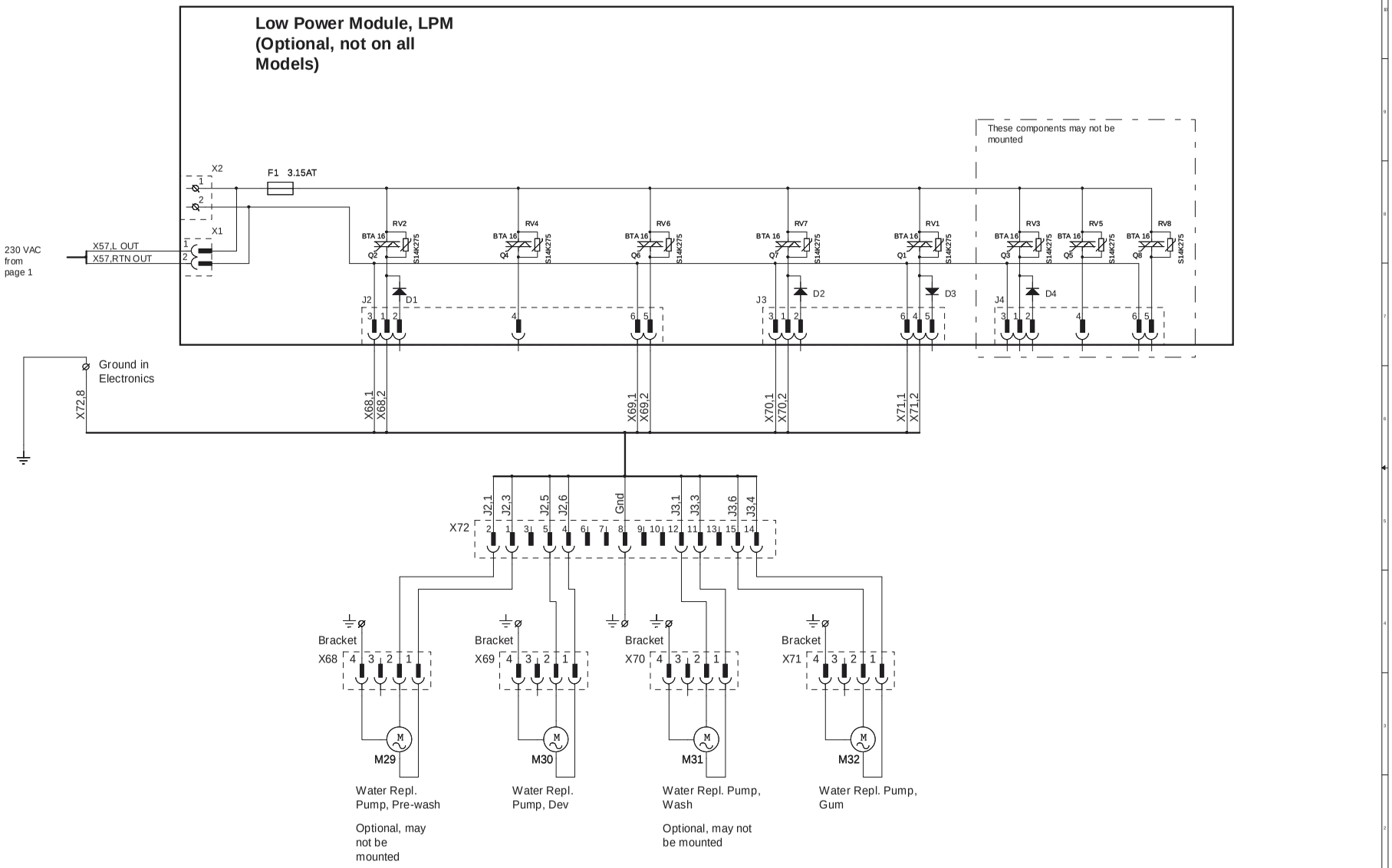
High Voltage Wiring II, 230 VAC Components



Components mounted on :													
Variant \ HPU	K1,1+2	K1,3+4	K2,1/2+3	K2,4/5+6	K3,1+2	K3,3+4	K4,1/2+3	K4,4/5+6	K5,1+3	K5,2+3	K5,4/5+6	K6,1+2	K6,3+4
Silver	M3, Chiller	E13	Chiller	M19	E6	E4, E8	M17	M14+15	M6	M4	M18	E3	M9+E2
Eco	K2	E15	None	M26	E7	M25	M17	M15	M6	M24	M20	E3	M9+E2

TGJ/+: High Voltage Wiring II	Date: Monday, January 14, 2008	GLUNZ & JENSEN ELECTRONIC AND MECHANICAL ENGINEERING	Number: 63664	Rev.: M
Function: 230 VAC Components	Constructor: TGJ		Doc. No.:	
	Approval:			
	Page: 3 Of: 6			OrCAD

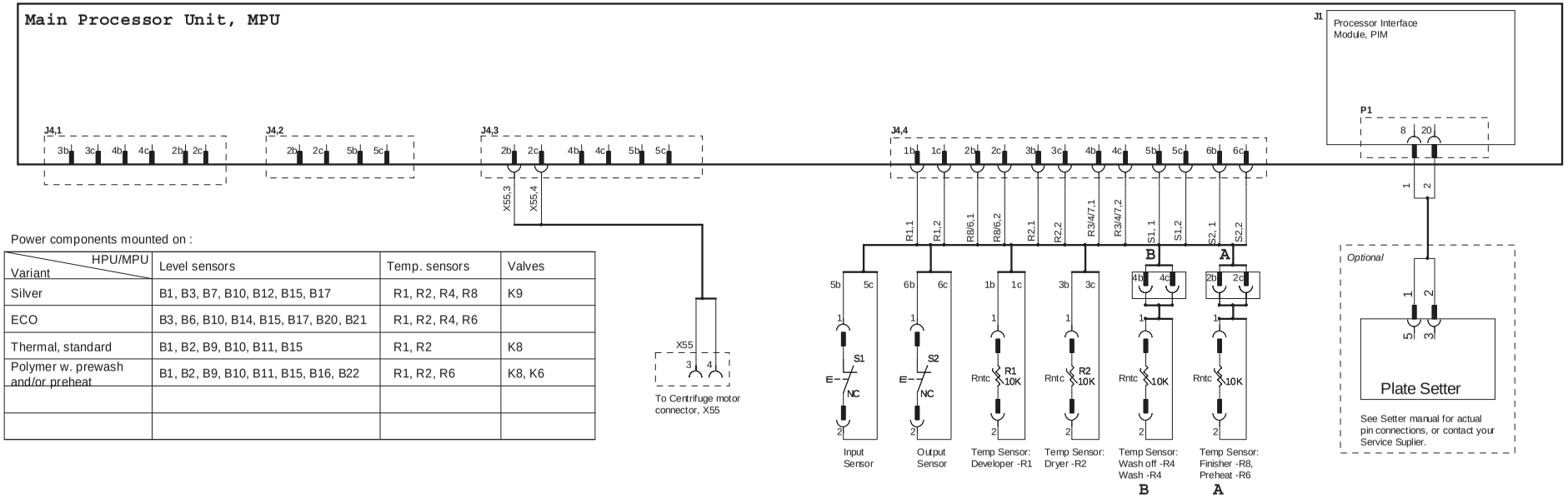
High Voltage Wiring III, 230 VAC, Control Devices, LPM



Title: High Voltage Wiring	Date: Monday, January 14, 2008	GLUNZ & JENSEN ELECTRONIC AND MECHANICAL ENGINEERING	Number: 63664 Rev.: M
Function: 230 VAC Control Devices, LPM	Constructor: JW Approval: Page: 4 Of: 6	This drawing belongs to Glunz & Jensen A/S and must not be used or handed over to any unauthorized person without our specific permission.	Doc. No.: OrCAD

Low Voltage Wiring, Sensors and Control Devices

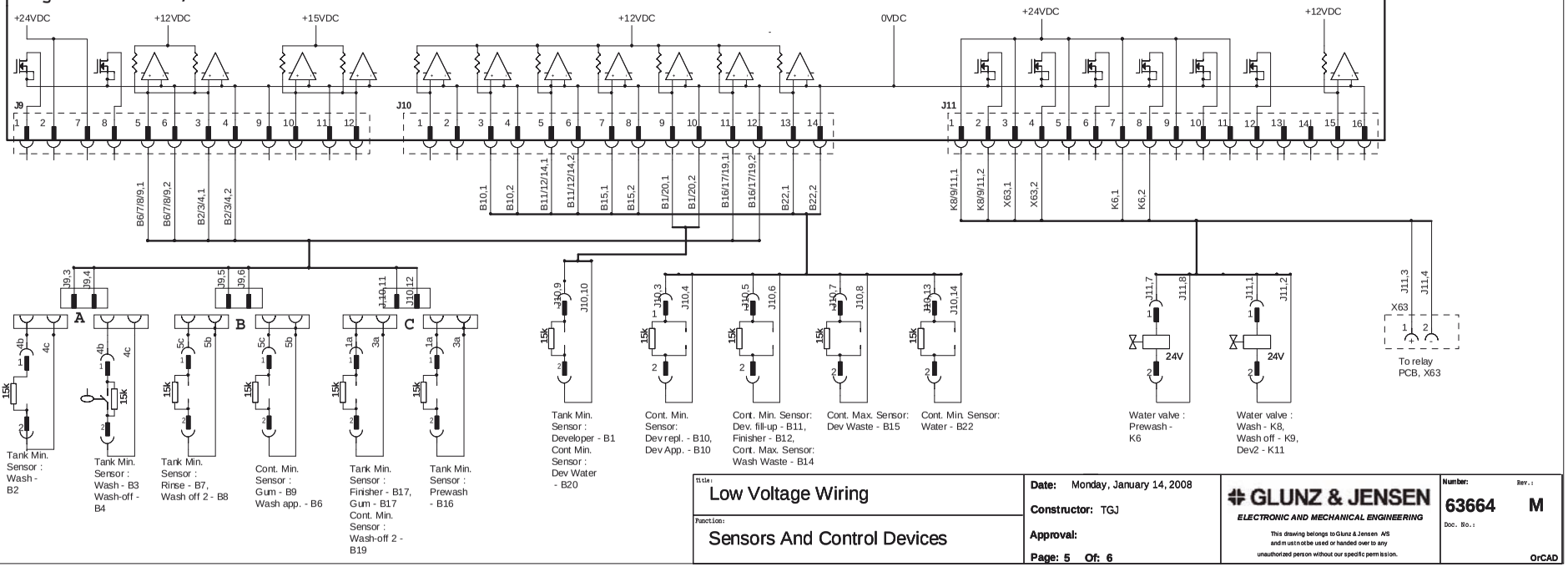
Main Processor Unit, MPU



Power components mounted on :

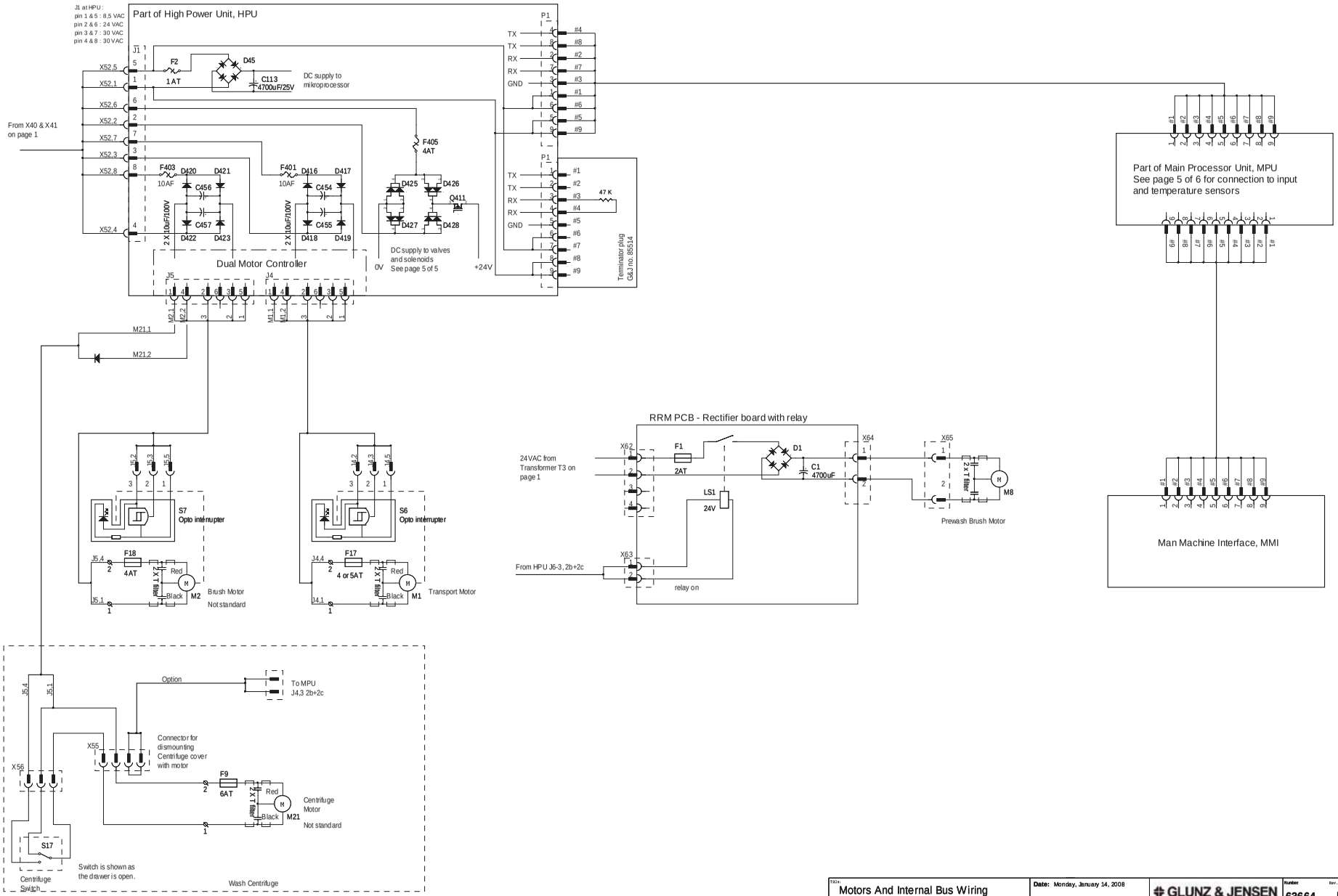
Variant \ HPU/MPU	Level sensors	Temp. sensors	Valves
Silver	B1, B3, B7, B10, B12, B15, B17	R1, R2, R4, R8	K9
ECO	B3, B6, B10, B14, B15, B17, B20, B21	R1, R2, R4, R6	
Thermal, standard	B1, B2, B9, B10, B11, B15	R1, R2	K8
Polymer w. prewash and/or preheat	B1, B2, B9, B10, B11, B15, B16, B22	R1, R2, R6	K8, K6

High Power Unit, HPU



Title: Low Voltage Wiring	Date: Monday, January 14, 2008	GLUNZ & JENSEN ELECTRONIC AND MECHANICAL ENGINEERING	Number: 63664 Rev.: M
Function: Sensors And Control Devices	Constructor: TGJ	This drawing belongs to Glunz & Jensen A/S and must not be used or handed over to any unauthorized person without our specific permission.	Doc. No.:
	Approval:		OrCAD
	Page: 5 Of: 6		

Motors and Internal Bus Wiring, 8, 24 and 35 VAC Distribution



Title: Motors And Internal Bus Wiring	Date: Monday, January 14, 2008	GLUNZ & JENSEN ELECTRONIC AND MECHANICAL ENGINEERING	Number: 63664	Rev.: M
Function: 8, 24 and 35 VAC Distribution	Constructor: JW		Doc. No.:	
	Approval:			
	Page: 6 Of: 6			OrCAD